"APPROVED FOR RELEASE: 08/25/2000 CIA-RDP86-00513R000411620006-1

DUSMATOV, V.D.; SALIKHOV, D.N.

Nepheline syenite in the upper Tagoby-Sabakh Valley. Trudy Inst. geol. AN Tadzh. SSR 8:118-131 '64.
(MIRA 17:11)

APPROVED FOR RELEASE: 08/25/2000 CIA-RDP86-00513R000411620006-1"

"APPROVED FOR RELEASE: 08/25/2000 CIA-RDP86-00513R000411620006-1

GAFUROV, T.G.; USMANOV, Kh.U.; IGAMBERDYYEV, I.I.; DUSMUKHAMEDOV, Kh.; ZAUROV, R.I.

Imparting crease-resistance to cotton fabrics treated with unsaturated aldehyde. Uzb. khim. zhur. 7 no.2:71-75 '63. (MIRA 16:8)

1. Institut khimii polimerov AN UzSSR.
(Crease-resistant fabrics)

APPROVED FOR RELEASE: 08/25/2000 CIA-RDP86-00513R000411620006-1"

"APPROVED FOR RELEASE: 08/25/2000 CIA-RDP86-00513R000411620006-1

DUSMURATOV, M.

Clinical aspects of echinococcosis of the cerebral ventricles.
Vop.neirokhir. 22 no.3:43-45 My-Je '58 (MIRA 11:8)

1. Nauchno-issledovatel'skiy ordena Trudovogo Krasnogo Znameni institut neyrokhirurgii imeni akad. N.N. Burdenko AMN SSSR.
(ECHINOCOCCOSIS,
cerebral ventric. (Rus))
(CEREBRAL VENTRICLES, dis.
echinococcosis (Rus))

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"APPROVED FOR RELEASE: 08/25/2000 CIA-RDP86-00513R000411620006-1

DUSMURATOV, M. Cand Med Sci -- (diss) "Echinococcus of skull bones and the brain." Mos, 1959. 19 pp (Acad Med Sci USSR), 200 copies (KL, 47-59, 116)

APPROVED FOR RELEASE: 08/25/2000 CIA-RDP86-00513R000411620006-1"

"APPROVED FOR RELEASE: 08/25/2000 CIA-RDP86-00513R000411620006-1

USMANOV, Kh.U.; GAFUROV, T.; DUSTMUKHAMEDOV, Kh.

Cross-linking of a cellulose macromolecule as a method for modification of its properties. Uzb.khim.zhur. 6 no.6:31-36 '62. (MIRA 16:2)

1. Institut khimii polimerov AN UzSSR.
(Cellulose) (Cotton)

APPROVED FOR RELEASE: 08/25/2000 CIA-RDP86-00513R000411620006-1"

"APPROVED FOR RELEASE: 08/25/2000 CIA-RDP86-00513R000411620006-1

DUSTMURATOV, M.D., kand.med.nauk

Craniography and contrast methods of examination in cases of brain hydatids. Med.zhur.Uzb. no.8:63-66 Ag '62.
(MIRA 16:4)

1. Iz kafedry gospital'noy khirurgii (zav. - prof. A.Ya. Yasnogorodskiy) Andizhanskogo gosudarstvennogo meditsinskogo instituta.

(BRAIN--HYDATIDS) (BRAIN--RADIOGRAPHY)

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"APPROVED FOR RELEASE: 08/25/2000 CIA-RDP86-00513R000411620006-1

DUSUMBETOV, A.

Elementary proof of the asymptotic law of distribution of prime numbers. Izv. AN Uz. SSR. Ser. fiz.-mat. nauk 7 no.2:24-31 '63. (MIRA 16:6)

1. Tashkentskiy gosudarstvennyy institut imeni Nizami.
(Numbers, Prime)

APPROVED FOR RELEASE: 08/25/2000 CIA-RDP86-00513R000411620006-1"

"APPROVED FOR RELEASE: 08/25/2000 CIA-RDP86-00513R000411620006-1

DUSUMBETOV, A.

Elementary proof of the asymptotic law of distribution of prime numbers in an arithmetic progression. Izv. AN Uz. SSR. Ser. fiz.-mat. nauk 7 no.3:5-12 '63. (MIRA 16:8)

1. Tashkentskiy pedagogicheskiy institut.

APPROVED FOR RELEASE: 08/25/2000 CIA-RDP86-00513R000411620006-1"

"APPROVED FOR RELEASE: 08/25/2000 CIA-RDP86-00513R000411620006-1

DUSUMBETOV, A.

Elementary transition between the determination of the functions M(x) and R(x). Dokl. AN Uz.SSR 21 no.8:5-8 '64.

(MIRA 19:1)

1. Tashkentskiy gosudarstvennyy pedagogicheskiy institut imeni Nizami. Submitted Jan. 28, 1964.

APPROVED FOR RELEASE: 08/25/2000 CIA-RDP86-00513R000411620006-1"

"APPROVED FOR RELEASE: 08/25/2000 CIA-RDP86-00513R000411620006-1

YASNOGORODSKIY, A.Ya., prof.; DUSMURATOV, M.D., kand. med. nauk

Cancer of the ileocecal angle and acute appendicitis.
Khirurgiia 39 no.10:113-116 O '63. (MIRA 17:9)

1. Iz kafedry gospital'noy khirurgii (zav.- prof. A.Ya. Yasnogorodskiy) Andizhanskogo meditsinskogo instituta.

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"APPROVED FOR RELEASE: 08/25/2000 CIA-RDP86-00513R000411620006-1

AKHMEDOV, A.M., prof.; DUSTOVA, R.T., aspirant; BELOV, Ye.M., kand. veterin. nauk; ANTONOVA, M.Ye., kand. veterin. nauk; NOSKOV, A.I., kand. veterin. nauk; LIPINA, A.N., aspirant; SIMONOV, A.P., aspirant; BOCHAROV, D.A., kand. sel'skokhoz. nauk; KHRENOV, N.M., assistent

Sanitary and veterinary hygiene. Veterinariia 41 no.4:89-100 Ap '64. (MIRA 17:8)

1. Samarkandskiy sel'skokhozyaystvennyy institut (for Akhmedov, Dustova). 2. Nauchno-proizvodstvennaya laboratoriya po bor'be s boleznyami molodnyaka sel'skokhozyaystvennykh zhivotnykh Ministerstva proizvodstva i zagotovok sel'skokhozyaystvennykh produktov RSFSR. (for Antonova). 3. Vsesoyuznyy nauchno- issledovatel'skiy institut veterinarnoy sanitarii (for Noskov). 4. Institut zhivotnovodstva Ministerstva sel'skogo khozyaystva Uzbekskoy SSR (for Lipina). 5. Vsesoyuznyy institut gel'mintologii imeni akademika K.I. Skryabina (for Simonov). 6. Moskovskiy tekhnologicheskiy institut myasnoy i molochnoy promyshlennosti (for Bocharov). 7. Khersonskiy sel'skokhozyaystvennyy institut imeni A.D. TSyurupy (for Khrenov).

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"APPROVED FOR RELEASE: 08/25/2000 CIA-RDP86-00513R000411620006-1

DUSYATSKIY, A.Ya., inzh.; NUDEL'MAN, G.E., inzh.; SEMENYUK, A.I., inzh.

Storage and transportation of bulk flour. Mekh.i avtom.proizv. 16 no.4:22-24 Ap '62. (MIRA 15:4)
(Flour--Transportation)

APPROVED FOR RELEASE: 08/25/2000 CIA-RDP86-00513R000411620006-1"

"APPROVED FOR RELEASE: 08/25/2000 CIA-RDP86-00513R000411620006-1

GURVICH, S.I.; BRUSNITSYNA, N.V.; DUSYATSKIY, V.A.; LUN'KO, V.F.

New promising type of beryllium-zinc mineralization. Razved. i okh. nedr 28 no.8:1-3 Ag '62. (MIRA 15:8)

1. Geologorazvedochnyy trest No.1.
(Genthelvite)

APPROVED FOR RELEASE: 08/25/2000 CIA-RDP86-00513R000411620006-1"

"APPROVED FOR RELEASE: 08/25/2000 CIA-RDP86-00513R000411620006-1

DUSZA, Waclaw, mgr inz.

Shaft drilling. Pt. 1. Shaft drilling abroad. Rudy i metale 7 no.8:361-366 Ag '62.

APPROVED FOR RELEASE: 08/25/2000 CIA-RDP86-00513R000411620006-1"

"APPROVED FOR RELEASE: 08/25/2000 CIA-RDP86-00513R000411620006-1

DUSZA, Waclaw, mgr.inz.

Boring mining shafts. Pt.2. Rudy i metale 7 no.9:423-428 S '62.

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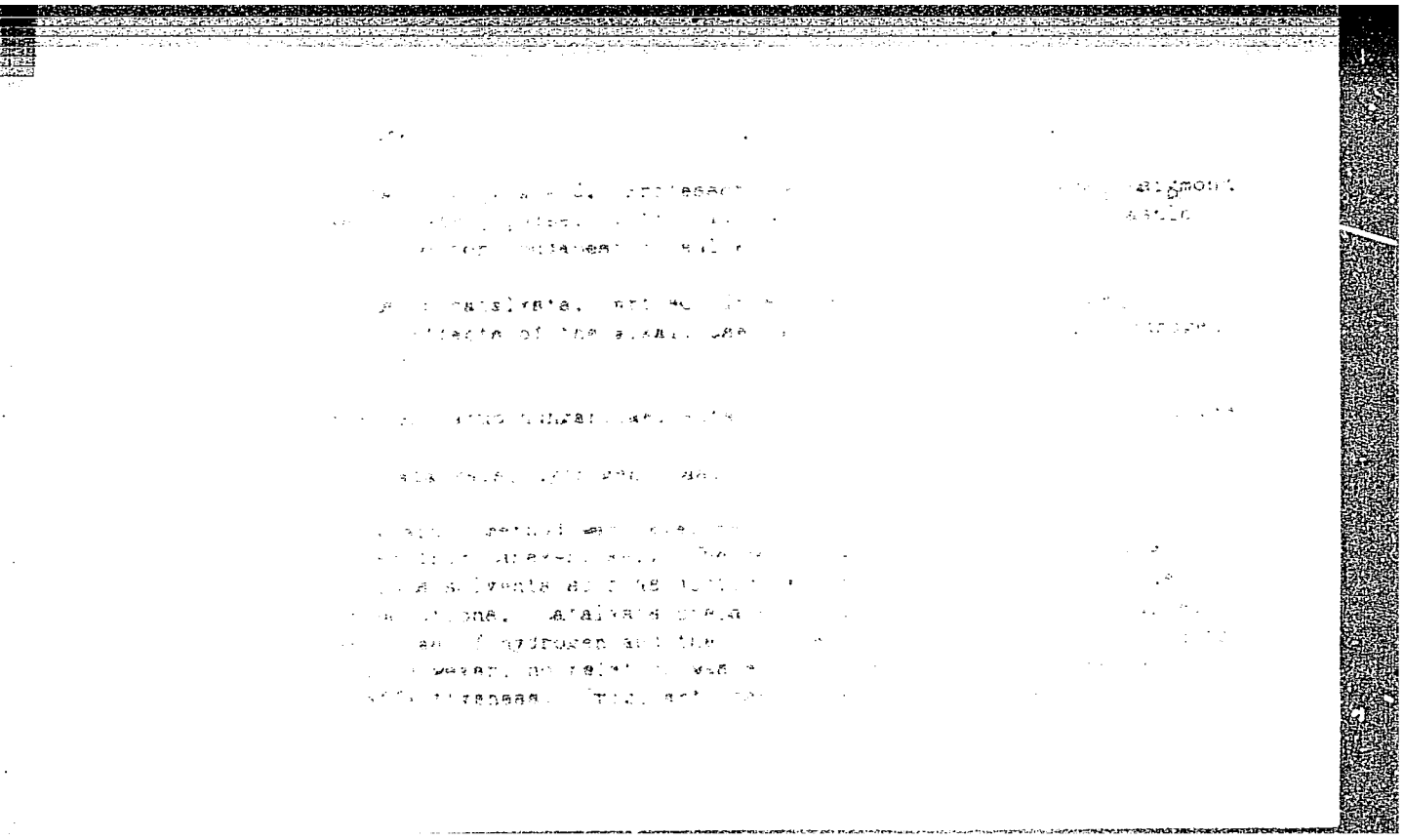

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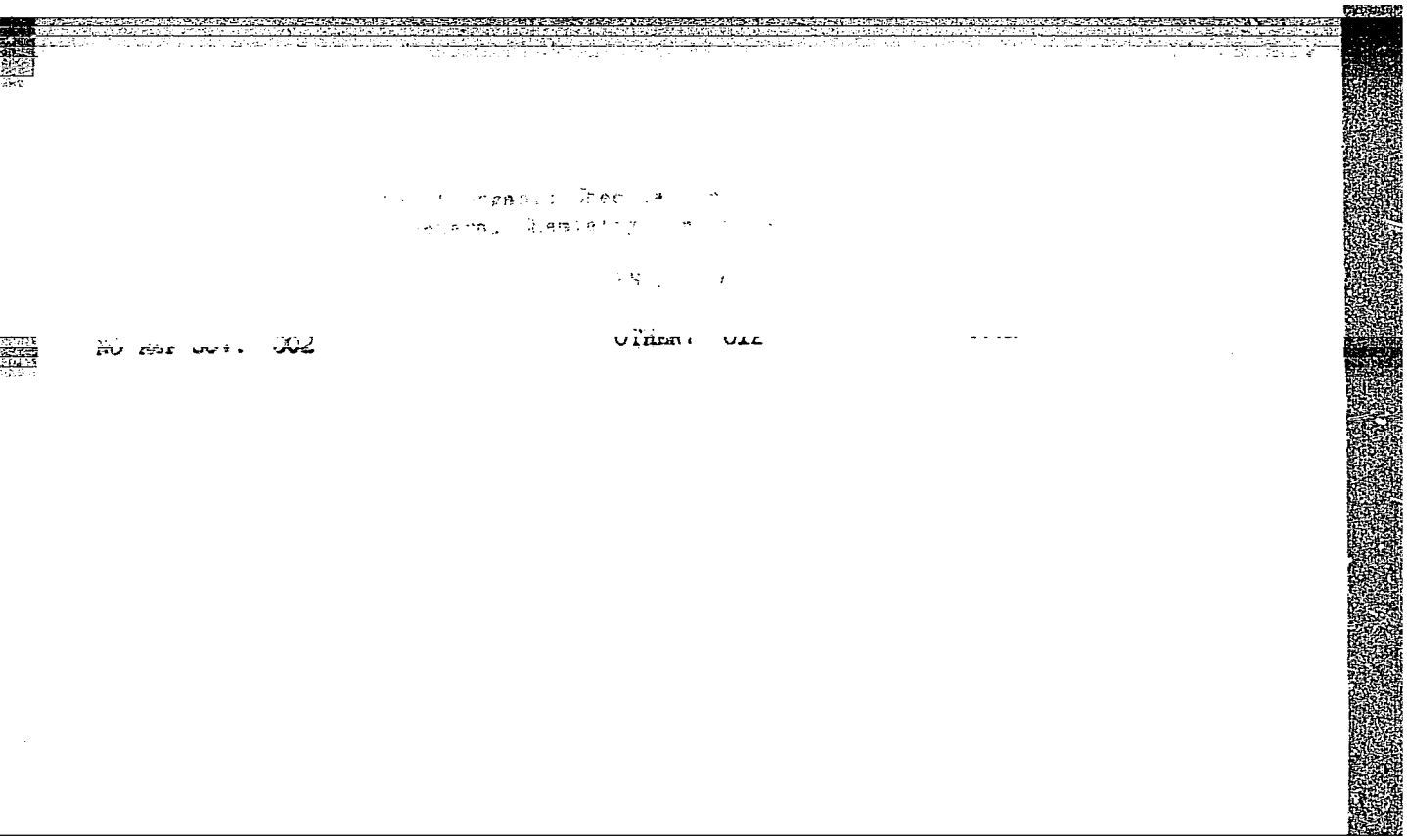

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"APPROVED FOR RELEASE: 08/25/2000 CIA-RDP86-00513R000411620006-1

CSUROS, Zoltan, prof., dr. (Budapest XI., Muegyetem); DUSZA, Zsigmond (Budapest XI., Muegyetem); PETRO, Jozsef (Budapest XI., Muegyetem)

Investigations on catalysts.XXXIX. Investigations on Raney-nickel catalysts.XIV.Correlations between the hydrogen content, sorption power and activity of Raney-nickel catalyst. Acta chimica Hung 30 no.4:461-471 '62.

1. Institute of Organic Chemical Technology, Technical University.
2. Editor, "Acta Chimica" (for Csuros).

APPROVED FOR RELEASE: 08/25/2000 CIA-RDP86-00513R000411620006-1"

"APPROVED FOR RELEASE: 08/25/2000 CIA-RDP86-00513R000411620006-1

DUSZEK, Maria (Warsaw)

Border load carrying capacity of concrete slabs with holes.
Archiw inz lad 10 no.3:323-340 '64.

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"APPROVED FOR RELEASE: 08/25/2000 CIA-RDP86-00513R000411620006-1

DUSZEV, Todor, prof.

Hormones and vitamins in the body of silkworms, and posibilities of the utilization. Prir. i znanie 16 no.4:22 Ap'63

1. Visshi selskostopanski institut "Vasil Kolarov", Plovdiv.

APPROVED FOR RELEASE: 08/25/2000 CIA-RDP86-00513R000411620006-1"

"APPROVED FOR RELEASE: 08/25/2000 CIA-RDP86-00513R000411620006-1

NANTKA-NAMIRSKI, Pawel; doc. dr.; KURZEPA, Stanislaw; DUSZKA, Jozef; KAZIMIERCZYK, Jadwiga; KIERYLOWICZ, Hanna.

Studies of the effect of the monoamine oxidase (MAO) inhibiting action of some gamma-carboline derivatives. Acta physiol. Pol. 16 no.1:131-139 Ja-F'65.

1. Zaklad Farmakologii Instytutu Farmaceutycznego w Warszawie (Dyrektor: doc. dr. P. Nantka-Namirski).

APPROVED FOR RELEASE: 08/25/2000 CIA-RDP86-00513R000411620006-1"

"APPROVED FOR RELEASE: 08/25/2000 CIA-RDP86-00513R000411620006-1

Duszyk, H.

H-27

POLAND/Chemical Technology, Chemical Products and Their Application, Part 3. - Fermentation Industry.

Abs Jour: Referat. Zhurnal Khimiya, No 10, 1958, 34138.

Author : U. Wojcicka, H. Duszyk, A. Białobrzeska.
Inst : Not given.
Title : Study of Determination Methods of Little Methyl Alcohol Amounts and Exposure of Its Contents in Raw Materials, Half-Products (Alcohols, Fruit Liqueurs) and Vodkas.

Orig Pub: Przem. spozywczy, 1957, 11, No 8, 361.

Abstract: A more precise method of methanol determination in raw materials, half-products and finished products of the alcohol industry is recommended in the case, if the methanol content converted into water-free ethanol was in the range from 0.03 to 2% by volume. 5 ml of each solution to be analysed and of each typical

Card : 1/3

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"APPROVED FOR RELEASE: 08/25/2000 CIA-RDP86-00513R000411620006-1

DUSZYNSKA, BOLESLAWA

Zasada somatologii stoickiej. Poznan, Nakl. Poznanskiego Tow. Przjaciol Nauk, 1948. 64, (3) p. (Poznanskie Towarzystwo Przyjaciol Nauk. Komisja Filozoficzna. Prace, t. 7, zesz. 3) (The principle of stoic somatology. English summary. bibl.)

NN Not in DLC

SO: Monthly List of East European Accessions (EEAL) LC, Vol. 6, no. 7, July 1957 Uncl.

APPROVED FOR RELEASE: 08/25/2000 CIA-RDP86-00513R000411620006-1"

"APPROVED FOR RELEASE: 08/25/2000 CIA-RDP86-00513R000411620006-1

DUSZYNSKA, E.

The struggle of the Dutchmen against water. p. 123.
(Geografia W Szkole, Vol. 10, No. 3, May/June 1957)

SO: Monthly List of East European Accessions (EEAL) LC, Vol. 6, No. 9, Sept 1957, Uncl.

APPROVED FOR RELEASE: 08/25/2000 CIA-RDP86-00513R000411620006-1"

"APPROVED FOR RELEASE: 08/25/2000 CIA-RDP86-00513R000411620006-1

DUSZYNSKA, Emilia; KACZMAREK, Jan

Possibilities of increasing the jointing durability of contactors. Wiad elektrotechn 31 no.7:155-156 Jl '63.

1. Instytut Obrobki Skrawaniem, Krakow.

APPROVED FOR RELEASE: 08/25/2000 CIA-RDP86-00513R000411620006-1"

"APPROVED FOR RELEASE: 08/25/2000 CIA-RDP86-00513R000411620006-1

DUSZYNSKA, Irena Gayer-

SEE: GAYER-DUSZYNSKA, Irena

FIELD: Biologist

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"APPROVED FOR RELEASE: 08/25/2000 CIA-RDP86-00513R000411620006-1

POLAND/Chemical Technology. Chemical Products and Their Application. Part 3. - Carbohydrates and Their Treatment. H

Abs Jour: Referat. Zhurnal Khimiya, No 21, 1958, 72147.

Author : Krystyna Duszyńska, Andrzej Warchalowski.
Inst :
Title : Difficulties in Beet-Sugar Production Connected With Changes in Composition of Beet Pulp.

Orig Pub: Gaz. cukrown., 1957, 59, No 12, 321-324.

Abstract: A description of physico-chemical changes in the beet pulp under the influence of the outside medium is made. The change of the beet pulp composition in the operating period of 1956-1957 (the amounts of cellulose, hemicellulose and pectin substances was determined), as well as the properties of the

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POLAND/Chemical Technolcgy. Chemical Products and Their Application. Part 3. - Carbohydrates and Their Treatment. H

Abs Jour: Referat. Zhurnal Khimiya, No 21, 1958, 72147.

decomposition products were studied. The total decrease of the pulp quantity (mainly at the expense of pectin substances) was 0.13%, which resulted in a decrease of the pressed pulp yield and an accumulation of decomposition products (mainly compounds of molecular weight above 5,000) in the diffusion juice (up to 350 g per liter). The presence of non-sugars hampers the purification and crystallization of the juice.

Card : 2/2

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"APPROVED FOR RELEASE: 08/25/2000 CIA-RDP86-00513R000411620006-1

DUTA, Claudia, Ing.

The Iasi Curved Furniture Plant. Ind Lemnului 15 no.9:353-361 S '64.

APPROVED FOR RELEASE: 08/25/2000 CIA-RDP86-00513R000411620006-1"

"APPROVED FOR RELEASE: 08/25/2000 CIA-RDP86-00513R000411620006-1

DUTA, Ioan; COVAR, O.A., economist principal; BUCUR, N.

Internal reserves used judiciously. Constr Buc 16 no.734: 2 1 F '64.

1. Inginer-sef al intreprinderii "Marmura", Simeria (for Duta). 2. Directorul intreprinderii de materiale de constructii "1 Mai", Bucov (for Bucur).

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"APPROVED FOR RELEASE: 08/25/2000 CIA-RDP86-00513R000411620006-1

USSR/Human and Animal Physiology (Normal and Pathological). T-12
Nervous System. Higher Nervous Activity. Behavior.

Abs Jour : Ref Zhur - Biol., No 11, 1958, 51296

Author : Dutchak, V.V.

Inst : University of Kiev.

Title : Characteristics of Stereotype Activity of Large Cerabral Hemispheres.

Orig Pub : Nauk. zap. Kievsk. un-t, 1956, 15, No 12, 127-138.

Abstract : In two dogs, in order to achieve stereotype interchanges, a positive stimulant (PS) was used 6 times, and a differentiated stimulant (DS) was used twice (at 3rd and 6th place) with 3-minute intervals. The motor reaction consisted of passing through a labyrinth which was composed of 4 parallel sections. After fixation was achieved, stereotypes were reproduced in their entirety when one PS

Card 1/2

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"APPROVED FOR RELEASE: 08/25/2000 CIA-RDP86-00513R000411620006-1

DUTCHAK, Ya.I.; BONDAR, N.M. [Bondar, N.M.]

Nature of the ordering of atoms in a cadmium - tin system.
Ukr. fiz. zhur. 4 no.3:402-403 My-Je '59. (MIRA 13:2)

1.L'vovskiy gosudarstvennyy universitet im. Iv. Franko.
(Cadmium-tin alloys)

APPROVED FOR RELEASE: 08/25/2000 CIA-RDP86-00513R000411620006-1"

"APPROVED FOR RELEASE: 08/25/2000 CIA-RDP86-00513R000411620006-1

DUTCHAK, Ya.I.

X-ray study of short-range order in liquid Sn-Bi alloys. Ukr. fiz.zhur. 4 no.4:504-507 Jl-Ag '59. (MIRA 13:4)

1. L'vovskiy gosudarstvennyy universitet im. Ivana Franko.
(Tin-bismuth alloys--Spectra)

APPROVED FOR RELEASE: 08/25/2000 CIA-RDP86-00513R000411620006-1"

"APPROVED FOR RELEASE: 08/25/2000 CIA-RDP86-00513R000411620006-1

DUTCHAK, Ya.I.

Temperature dependence of short-range order in liquid lead. Ukr. fiz. zhur. 5 no.1:94-99 Ja-F '60. (MIRA 14:6)

1. L'vovskiy gosudarstvennyy universitet im. Iv. Franko.
(Lead)
(Crystals)

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5.4130
5.2200

68636

S/126/60/009/02/031/033
E032/E314

AUTHOR: Dutchak, Ya.I.

TITLE: On the Structure of Liquid Antimony

PERIODICAL: Fizika metallov i metallovedeniye, 1960, Vol 9, Nr 2, pp 314 - 315 (USSR)

ABSTRACT: So far, no quantitative data have been reported on the character of the short-range order in liquid antimony. We have carried out an X-ray study of liquid antimony near the melting point of that material (640 °C). The X-ray photographs were obtained with copper radiation, made monochromatic with the aid of differential filters. The specimen was placed in a ceramic micro-furnace and the temperature of the specimen was measured with the aid of a chromel-alumel thermocouple. The specimen was in a hydrogen atmosphere throughout. The X-ray photographs were examined with the visual MF2 microphotometer. The intensity curve (Figure 1) for the X-rays scattered by liquid antimony shows three maxima. A subsidiary maximum is observed at $\sin \vartheta / \lambda \approx 0.250$. The short-range order is analysed with the aid of radial distribution curves,

Card1/3

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"APPROVED FOR RELEASE: 08/25/2000 CIA-RDP86-00513R000411620006-1

On the Structure of Liquid Antimony

using the equation:

$$4\pi r^2 \rho(r) = 4\pi r^2 \rho_o + \frac{2r}{\pi} \int_o^{\infty} s \cdot i(s) \sin sr\, ds$$

where:

$$i(s) = \frac{I_{\text{э.е}}}{f^2} = 1 \ .$$

In these expressions $I_{\text{э.е}}$ is the observed intensity in electronic units, f is the atomic factor and ρ_o is the mean density. The parameter s is defined by

$$s = 4\pi \sin\theta / \lambda \ .$$

Card2/3

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E032/E314

On the Structure of Liquid Antimony

The radial distribution curve (Figure 2) has maxima at r = 2.85, 4.0 and 5.65 Å. The area under the first maximum was used to determine the coordination number which was found to be 6.8. Tatarinova (Ref 1) has studied antimony in the amorphous state and found four atoms on the first coordination sphere (r = 2.85 Å). In the crystalline state there are three atoms at r = 2.85 Å. It is, therefore, concluded that antimony has different structures in the crystalline, the amorphous and the liquid states. There are 2 figures and 1 Soviet reference.

ASSOCIATION: L'vovskiy gosudarstvennyy universitet im. I. Franko (L'vov State University im. I. Franko)

SUBMITTED: August 17, 1959

Card 3/3

APPROVED FOR RELEASE: 08/25/2000 CIA-RDP86-00513R000411620006-1"

"APPROVED FOR RELEASE: 08/25/2000 CIA-RDP86-00513R000411620006-1

80886
S/126/60/009/06/012/025
E073/E335

18.9200

AUTHOR: Dutchak, Ya.I.

TITLE: Coordination Number and Structure of Liquid Metals

PERIODICAL: Fizika metallov i metallovedeniye, 1960, Vol 9, Nr 6, pp 888 - 891 (USSR)

ABSTRACT: In investigating metals in the liquid state by means of X-ray or other diffraction methods, the coordination number and the radius of the coordination sphere are determined from the obtained curve of the radial distribution. The coordination number is defined as the number of atoms at a distance r from the atom considered as being the central one. It can be seen from the very definition of the coordination number that this number provides a quantitative characteristic of the short-range order but gives no information on the lattice (on the structure) which forms the basis for the given short-range order, i.e. the coordination number does not give any idea on the spatial distribution of particles composing the liquid. The structure of a liquid should be characterised by some "lattice", the atoms of which have a distribution as determined from

Card1/2

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80886
S/126/60/009/06/012/025
E073/E335

Coordination Number and Structure of Liquid Metals

experimental results (the curve of radial distribution), i.e. it is necessary to determine the lattice which forms the basis for the given short-range order. It is concluded that the structure of liquid metals is characterised by that "lattice", the "blurring" of which yields the best agreement between theoretically and experimentally determined radial distribution curves and also that the coordination number does not determine the structure of the liquid but it determines the degree of perfection of the "lattice" which characterises the given metal in the liquid state. There are 2 figures and 7 references, 1 of which is German, 1 Swedish and 5 are Soviet.

ASSOCIATION: L'vovskiy gosudarstvennyy universitet im. Iv. Franko (L'vov State University imeni Iv. Franko)

SUBMITTED: December 23, 1959

Card 2/2

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APPROVED FOR RELEASE: 08/25/2000 CIA-RDP86-00513R000411620006-1"

"APPROVED FOR RELEASE: 08/25/2000 CIA-RDP86-00513R000411620006-1

DUTCHAK, Ya.I.

Fluctuation of the coordination number in liquid lead. Zhur. tekhn. fiz. 30 no.10:1251-1252 O '60. (MIRA 13:10)

1. L'vovskiy gosuniversitet imeni Iv.Franko.
(Lead) (Coordination number)

APPROVED FOR RELEASE: 08/25/2000 CIA-RDP86-00513R000411620006-1"

"APPROVED FOR RELEASE: 08/25/2000 CIA-RDP86-00513R000411620006-1

S/185/61/006/001/011/011
D210/D305

24.7700

AUTHORS: Mykolaychuk, O.H. and Dutchak, Ya.I.

TITLE: Preparation of Hg S microfilms and the kinetics of their crystallization

PERIODICAL: Ukrayins'kyy fizychnyy zhurnal, v. 6, no. 1, 1961, 136-137

TEXT: The semi-conductive properties of sulphides of the AB type have recently aroused great attention. The authors in this short communication give an account of the X-ray study of HgS microfilms, because until now the properties of HgS as semiconductors have been studied on thick samples only. Microfilms of HgS were obtained by sublimation in vacuum (10^{-4} - $5 \cdot 10^{-5}$mm) of cinnabar and metacinnabar. The compounds were placed in a quartz crucible (3 x 35mm), heated externally with tantalum wire heater, the temperature controlled by a chromium-aluminum thermocouple. For studying crystallization kinetic, microfilms of 10^{-6}-$5 \cdot 10^{-7}$ cm thickness were produced. In the above range of thickness, the films were amorphous, as shown by

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Preparation of Hg S microfilms...

X-ray photographs; the crystallization occurred after heating with electron beam for 10 - 25 min and without heating, this process in vacuum lasted 20 - 28 hours. The metacinnabar microfilms of this thickness are very stable at room temperature and the conversion of metacinnabar to cinnabar took place only after prolonged heating with an electron beam, or by heating in a vacuum oven during 25 - 30 min at 150°C. At room temperature this conversion (in vacuo) took 80 hours, the process being a gradual one, after 40 hours X-ray photographs showing the presence of both HgS- the cubic and the hexagonal ones. The authors express their gratitude to M.V. Pashkovs'kyy and S.B. Savitskyy for their help. There are 1 figure, 1 table and 3 references: 2 Soviet-bloc and 1 non-Soviet-bloc. The reference to the English-language publication reads as follows: R.W. Hoffman, R.D. Daniels, E.C. Grittenden, Proc. Phys. Soc. 64, 492, 1954.

ASSOCIATION: L'vivs'kyy derzhavnyy universitet im. Iv. Franka (State University of L'vov, im. Iv. Frank)

SUBMITTED: May 18, 1960

Card 2/2

APPROVED FOR RELEASE: 08/25/2000 CIA-RDP86-00513R000411620006-1"

"APPROVED FOR RELEASE: 08/25/2000 CIA-RDP86-00513R000411620006-1

20028

1418, 1145, 1454

S/070/61/006/001/006/011
E032/E514

18.9200

AUTHOR: Dutchak, Ya. I.

TITLE: X-ray Study of the Structure of Liquid Aluminium

PERIODICAL: Kristallografiya, 1961, Vol.6, No.1, p.124

TEXT: X-ray studies of liquids yield the coordination number and the radius of the coordination sphere. These numbers do not provide a complete representation of the structure of a liquid. This structure should be characterized by a certain "lattice" whose atoms are distributed so as to give rise to the experimentally observed radial distribution curve. In practice, such a "lattice" can be chosen by "smearing out" theoretical lattices made up of spheres having radii equal to the interatomic distance in the liquid using the formula

$$g(r) = \sum_s \frac{n_s}{\sqrt{\pi(\alpha + 4Dr_s)}} \exp\left\{-\frac{(r - r_s)^2}{\alpha + 4Dr_s}\right\} \quad (1)$$

where n_s is the number of atoms at a distance r_s from the atom which is taken as the central one, D is the coefficient of structural diffusion, $\alpha = 2kT/f$, k is Boltzmann's constant and f is the

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X-ray Study of the Structure .....

quasielastic bonding factor. The present author has used Al specimens at 670, 700, 730, 760, 790 and 820°C to obtain X-ray patterns. The radial distribution curves shown in the figure were obtained from these patterns. The dotted curves in this figure were obtained from the above theoretical formula using a cubic face-centred lattice. It is, therefore, suggested that the short-range order in liquid aluminium is based on the cubic face-centred lattice. There are 1 figure and 3 references: 1 Soviet and 2 non-Soviet.

(Note: This is a complete translation).

ASSOCIATION: L'vovskiy gosudarstvennyy universitet im. I. Franko
(L'vov State University imeni I. Franko)

SUBMITTED: April 23, 1960 (initially)
September 10, 1960 (after revision)

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"APPROVED FOR RELEASE: 08/25/2000 CIA-RDP86-00513R000411620006-1

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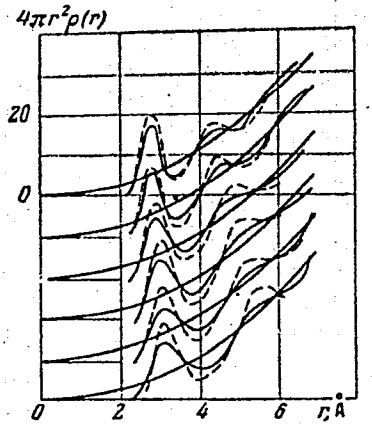
E032/E514

X-ray Study of the Structure .....



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20217
S/126/61/011/002/017/025
E032/E314

11,3950

AUTHOR: Dutchak, Ya.I.

TITLE: Short-range Order and Properties of Liquid Bismuth

PERIODICAL: Fizika metallov i metallovedeniye, 1961, Vol. 11, No. 2, pp. 290 - 295

TEXT: The present authors have carried out an X-ray study of the temperature dependence of short-range order in liquid bismuth and simultaneous measurements of the resistivity and viscosity. The X-ray photographs were obtained with copper radiation, monochromatised with the aid of differential filters (nickel, cobalt) . The X-ray photographs were examined with a visual microphotometer (МФ-2 (MF-2). Fig. 2 shows some of the intensity curves obtained for liquid bismuth. These curves have three maxima whose position and character change with temperature. These curves were used to obtain the radial distribution curves with the aid of the equation

(1)

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Short-range Order ....

where $4\pi r^2\rho(r)$ is the number of atoms in a sphere of radius r and thickness dr , I is the intensity in electron units and $i(s) = (I/f^2) - 1$, $s = 4\pi \sin\theta/\lambda$. In Fig. 3, the experimental curves are marked "1" and the theoretical curves "2". The radial distribution curves were used to determine the temperature dependence of the radius of the coordination sphere and the coordination number. Table 2 gives the temperature dependence of $\sin\theta/\lambda$, r, n, and D for liquid bismuth. The coordination number for liquid bismuth increases from 7.2 at the melting point to 8.1 at 300 °C. Further increase in the temperature leads to a linear reduction in the coordination number with temperature. It was found that the short-range order in liquid bismuth appears to be based on the hexagonal, closely-packed lattice. In Fig. 3 the dotted curve was evaluated with the aid of the Prinz-Glauberman theory (Refs. 10-12). The temperature dependence of the structural diffusion coefficient (Fig. 4) is of the usual type and the results obtained are in agreement

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with those reported by Tzvetkov (Ref. 8). The electrical conductivity of liquid bismuth was measured by the rotating-magnetic field method and the results are shown in Fig. 5, in which the conductivity is plotted along the vertical axis and the temperature along the horizontal axis. As can be seen, this rapid change in the conductivity in the neighbourhood of the melting point (indicated by the arrow) is due to re-arrangement in the short-range order structure, which is in complete agreement with the X-ray results. The viscosity of liquid bismuth was measured by the oscillating-cylinder method. The kinematic vicsocity ν is plotted as a function of temperature in Fig. 6. The above values of the kinematic viscosity (in cm^2/sec) were used to determine the activation energy F given by

$$F = RT \ln \frac{M\nu}{nH} \qquad (4)$$

where R is the gas constant,
M is the molecular weight,

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N is the Avogardo number and
h is the Planck constant (Gleston et al - Ref. 19).
The activation energy f (in cal/mole) is quoted in Fig. 7 as a function of temperature. Again, a discontinuity associated with changes in the short-range order structure is observed.
Acknowledgments are expressed to Professor A.Ye. Glauberman, Docent A.M. Muzychuk and A.G. Nikolaychuk for valuable advice and interest.
There are 7 figures, 2 tables and 21 references: 12 Soviet and 9 non-Soviet.

ASSOCIATION: L'vovskiy gosudarstvennyy universitet im. Iv. Franko (L'vov State University im. Iv. Franko)

SUBMITTED: July 15, 1960

APPROVED FOR RELEASE: 08/25/2000 CIA-RDP86-00513R000411620006-1"

"APPROVED FOR RELEASE: 08/25/2000 CIA-RDP86-00513R000411620006-1

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E032/E314

Short-range Order ....

Table 2:

Temperature, °C	Intensity Curve, sin ϑ/λ				Radial distribution curve r	Radial distribution curve n	D
275	0.170	0.240	0.33	0.52	3.34	7.4	0
285	0.170	0.238	0.33	0.52	3.34	7.8	0.0036
300	0.169	0.236	0.32	-	3.36	8.0	0.0053
320	0.168	-	0.30	-	3.40	7.6	0.0073
340	0.168	-	0.30	-	3.42	7.4	0.0084
360	0.165	-	0.28	-	3.42	7.0	0.0090

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E032/E314

Short-range Order ....

Fig. 2:

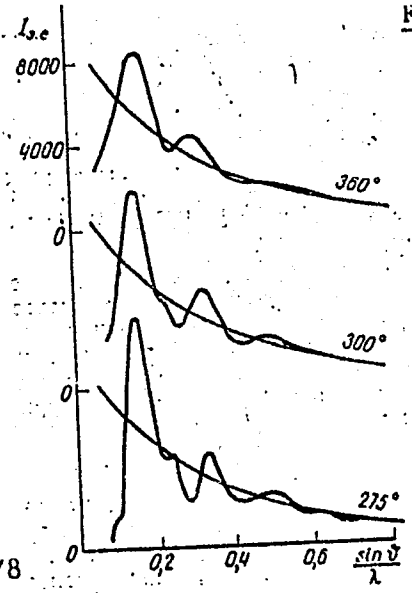
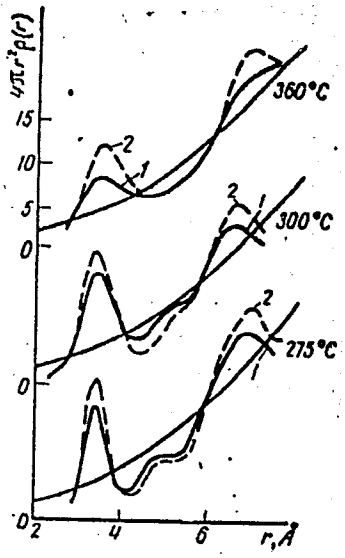


Fig. 3:



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Short-range Order ....

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E032/E314

Fig. 4:

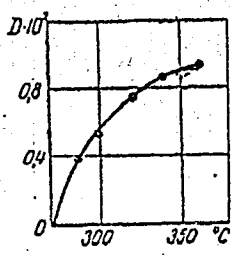
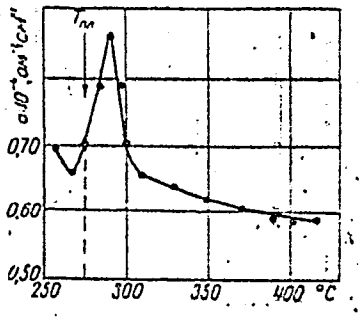


Fig. 5:



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Short-range Order ....

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E032/E314

Fig. 6:

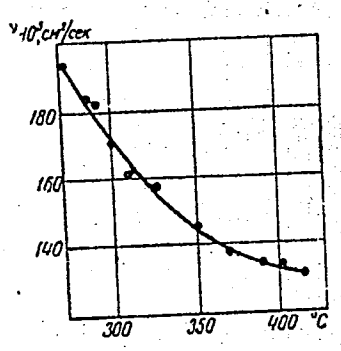
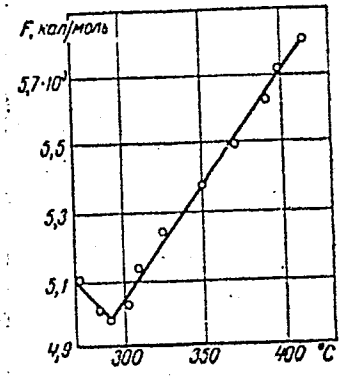


Fig. 7:



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35199
S/185/62/007/002/013/016
D299/D302

18.7540

AUTHORS: Dutchak, Ya.Y., Klym, M.M., and Mykolaychuk, O.H.

TITLE: On the viscosity of some liquid metal alloys

PERIODICAL: Ukrayins'kyy fizychnyy zhurnal, v. 7, no. 2, 1962, 217 - 219

TEXT: The results are given of measurements of kinematic viscosity of the liquid alloys Sn-Bi (20 % Bi), Ga-Sn (8 % Sn), and Sn-Cd (32.25 % Cd) over a wide temperature-range; from the viscosity values, the free activation energy of viscous flow was calculated. In the references it was shown that the structure of a liquid and its viscous properties are related. The kinematic viscosity was determined by O.E. Meyer's method (Ref. 6: Ann. d. Phys., 43, 1, 1891), further developed by E.H. Shvydkovs'kyy (Ref. 7: Nekotoryye voprosy vyazkosti rasplavlennykh metallov, M., GITTL, 1958). In Ref. 7 (Op.cit.), the hydrodynamic problem is solved of the vibrations of an elastically-supported cylinder, filled with liquid. Thereby a formula is obtained for the kinematic viscosity ν; the latter is

X

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On the viscosity of some liquid ...

calculated by successive approximations. The results of the experimental determination of the viscosity of the above-mentioned liquid alloys, at various temperatures, are shown in a figure; the viscosity of all the investigated alloys decreased with temperature. The non-monotonous decrease in viscosity (with temperature), in the case of the eutectic liquid alloy Sn-Cd, is an indication of a change in the short-range order. This assumption was confirmed by X-ray investigations of the liquid alloy. The free activation energy F was calculated by the formula: $F = RT \ln \frac{M\nu}{Nh}$, where R is the gas constant, T - the absolute temperature, M - the molecular weight. The temperature dependence of the free activation energy of viscous flow is shown in a figure. The free activation-energy increases with temperature. The viscosity investigations showed that in the case of an eutectic liquid Sn-Cd alloy, there are regions with structurally-pure components, whereas with increasing temperature, the various types of atoms are statistically distributed. There are 2 figures and 9 references: 7 Soviet-bloc and 2 non-Soviet-bloc. The reference to the English-language publication reads as follows:

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"APPROVED FOR RELEASE: 08/25/2000 CIA-RDP86-00513R000411620006-1

On the viscosity of some liquid ... S/185/62/007/002/013/016
D299/D302

S. Glasstong, K. Laidler, H. Eyring, The theory of rate processes, New York - London, 1941.

ASSOCIATION: L'vivs'kiy derzhuniversytet im. Iv. Franka (L'viv State University im. Iv. Franko)

SUBMITTED: May 19, 1961

Card 3/3

APPROVED FOR RELEASE: 08/25/2000 CIA-RDP86-00513R000411620006-1"

"APPROVED FOR RELEASE: 08/25/2000 CIA-RDP86-00513R000411620006-1

S/126/62/014/004/010/017
E111/E160

AUTHORS: Dutchak, Ya.I., Mykolaychuk, A.G., and Klym, N.M.

TITLE: An X-ray investigation of the structures of certain metallic liquids.

PERIODICAL: Fizika metallov i metallovedeniye, v.14, no.4, 1962, 548-554.

TEXT: It is considered that the diffraction analysis of liquids is satisfactorily developed, and even complex liquids present no great difficulty as regards making the experimental measurements. The theoretical interpretation of the results is still uncertain. One-component liquids can be treated by either of two methods: a) the positions of the diffraction maxima can be compared with those in curves from solids having the same first coordination sphere, or b) the theoretical scattering curve can be calculated for an assumed radial distribution by the method of Prins-Glauberman and compared with the experimental. In general these methods agree for materials which are close-packed in the solid state. Only the second method is suitable for loosely-packed structures. The first method does not enable small changes to be

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followed (such as changes with temperature). Metals which are not close-packed in the solid state have been studied: e.g. Al, Pb, Bi, Sb and Ga. The temperature variation of the coordination number (C.N.) for each of these liquid metals was found. In general, the C.N. falls with increasing temperature but Bi shows an anomaly where there is a maximum at 300 °C; Sb is similar. Bi appears to be hexagonal closely packed in the liquid state. Al and Pb are face centered cubic. For Ga the maximum C.N. is at the m.p. Binary liquid alloys were studied in spite of the difficulties in interpreting the results. Sn/Bi, 4:1; Bi/In, 4:1; Sn/Cd, 2:1; and Ga/Sn, 11.5:1, were examined. In the first two cases it was assumed that the two kinds of atoms were statistically distributed. A model of the average structure of the two separate liquids was used. [Editor's note: in tables 2 and 6, Zn appears instead of In but this is probably a mistake.] These liquid alloys seem to be hexagonal, closely packed. The second pair of alloys are of eutectic composition and for Sn/Cd the distribution appears as in the solid at the m.p. but statistical at higher temperatures; for Ga/Sn the distribution is statistical as regards type of atom.

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An X-ray investigation of the ... S/126/62/014/004/010/017
E111/E160

There are 6 figures and 2 tables.

ASSOCIATION: L'vovskiy ordena Lenina gosudarstvennyy universitet im. Iv. Franko
(L'vov Order of Lenin State University, imeni Iv. Franko)

SUBMITTED: February 13, 1962.

Card 3/3

APPROVED FOR RELEASE: 08/25/2000 CIA-RDP86-00513R000411620006-1"

"APPROVED FOR RELEASE: 08/25/2000 CIA-RDP86-00513R000411620006-1

S/126/62/014/005/012/015
E073/E435

AUTHORS: Dutchak, Ya.I., Klym, N.M., Mykolaychuk, A.G.

TITLE: On the structure and properties of In_2Bi alloys in the liquid state

PERIODICAL: Fizika metallov i metallovedeniye, v.14, no.5, 1962, 787-789

TEXT: The electric conductivity and kinematic viscosity were measured and the curves of the intensity of X-ray scattering and radial distribution of the atoms determined. Conclusions: At the fusion temperature the atoms of In and Bi in In_2Bi are distributed in the same way as in the solid state. Redistribution of the atoms takes place between the fusion temperature and 120°C and at this temperature the atoms in In_2Bi are distributed statistically. Further temperature rise leads to a regular decrease in the average coordinate number similar to that occurring on the transition of solid solutions into the liquid state. There are 5 figures and 1 table.

ASSOCIATION: L'vovskiy gosudarstvennyy universitet im. Iv. Franko (L'vov State University imeni Iv. Franko)

SUBMITTED: March 28, 1962

Card 1/1

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"APPROVED FOR RELEASE: 08/25/2000 CIA-RDP86-00513R000411620006-1

43555
S/126/62/014/005/013/015
E073/E535

AUTHORS: Dutchak, Ya. I., Stets'kiv, O.P. and Prokhorenko, V.Ya.

TITLE: On the thermo e.m.f. of liquid couples

PERIODICAL: Fizika metallov i metallovedeniye, v.14, no.5, 1962, 789-791

TEXT: The following liquid couples were investigated: Pb-Sn, Sb-Bi, Pb-Cd, Pb-Bi, Sn-Cd, Sn-eutectic alloy lead/bismuth, in the temperature range between 380 to 820°C. The authors assumed that E consists of two components: the contact component due to the temperature dependence of the contact potential difference and the volume component due to diffusion of the current carriers from the hot to the cold joint:

$$E = \left(\frac{\partial E_c}{\partial T} + \frac{\partial E_o}{\partial T} \right) \Delta T \qquad (2)$$

where ΔT - difference between the temperatures of the hot and cold joints, E_c - contact potential difference. The thermo e.m.f. was measured on couples produced from two quartz tubes of 1.5 to 2 mm dia. into which the investigated metals or alloys were placed

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On the thermo e.m.f. of liquid couples S/126/62/014/005/013/015
E073/E535

and the contact with the liquid thermocouple was by means of Armco iron, which is stable in the metals and alloys being investigated. The thermo e.m.f. was measured by a compensation method in a twin furnace, the top part of which served for maintaining constant the temperature of the "cold" joint. For Pb-Sn and Sn-Cd couples, the thermo e.m.f. increased up to the temperatures of 520 and 490°C, respectively. A further temperature increase brought about a drop in the thermo e.mf. In the Pb-Sn couple the lead was positive up to about 585°C, then the sign of the thermo e.m.f. changed; in the Sn-Cd couple the change in sign occurred at about 650°C. In Pb-Sn couples there is a change of sign twice, since in the solid state tin has a positive polarity. In Sb-Bi thermocouples the thermo e.m.f. increases continuously but there is a bend in the temperature range 700 to 728°C. A similar pattern was observed for Pb-Bi couples. The thermo e.m.f. of tin-eutectic Pb-Bi couples decreases with temperature and there is a change of sign at 590°C, i.e. the Pb-Bi eutectic alloy becomes positive. The temperature of the "cold" joint was 360°C for the Pb-Sn couple, 380°C for the Sn-Cd couple, 665°C for the Sb-Bi, 400°C for the

Card 2/3

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On the thermo e.m.f. of liquid couples S/126/62/014/005/013/015
E073/E535

Pb-Bi and 235°C for the Sn-eutectic Pb-Bi. There are 5 figures.

ASSOCIATION: L'vovskiy ordena Lenina gosudarstvennyy universitet imeni Iv. Franko
(L'vov Lenin Order State University imeni Iv.Franko)

SUBMITTED: March 20, 1962

Card 3/3

APPROVED FOR RELEASE: 08/25/2000 CIA-RDP86-00513R000411620006-1"

"APPROVED FOR RELEASE: 08/25/2000 CIA-RDP86-00513R000411620006-1

L 14297-63 EWP(q)/EWT(m)/BDS AFFTC/ASD JD/HW-2/JG

ACCESSION NR: AP3000108 S/0126/63/015/004/0622/0624

AUTHOR: Dutchak, Ya. I.; Panasyuk, P. V.

TITLE: Viscosity and electrical conductivity of Bi-Sb alloys in liquid state

SOURCE: Fizika metallov i metallovedeniye, vol. 15, no. 4, 1963, 622-624

TOPIC TAGS: Bi-Sb alloy, viscosity, electrical conductivity

ABSTRACT: Physical properties of liquid Bi-Sb alloys were measured, and an attempt was made to determine, on the basis of the measurements, the most probable nature of the short-range order in the liquids. The Sb concentration in the samples started with 10% and was increased by 10% to 90%. Samples weighing 12 g were placed in vacuum-sealed quartz ampules, and their viscosities and electrical conductivities were measured with a device similar to that of V. M. Glazov. The kinematic viscosity of the liquid alloys was calculated according to the Ye. G. Shvidkovskiy formula. The electrical conductivity was measured by the relative method, with liquid lead and tin serving as standards. The increase in the kinematic viscosity with the increase in temperature followed the exponential law. The electrical conductivity isotherms were in liquid alloys similar to those of solid solutions, and atomic correlations in the two states of alloys were alike. The authors conclude that the nature of the short-range order does not change in liquid alloys.

Card 1/2

Association: L'vov State University

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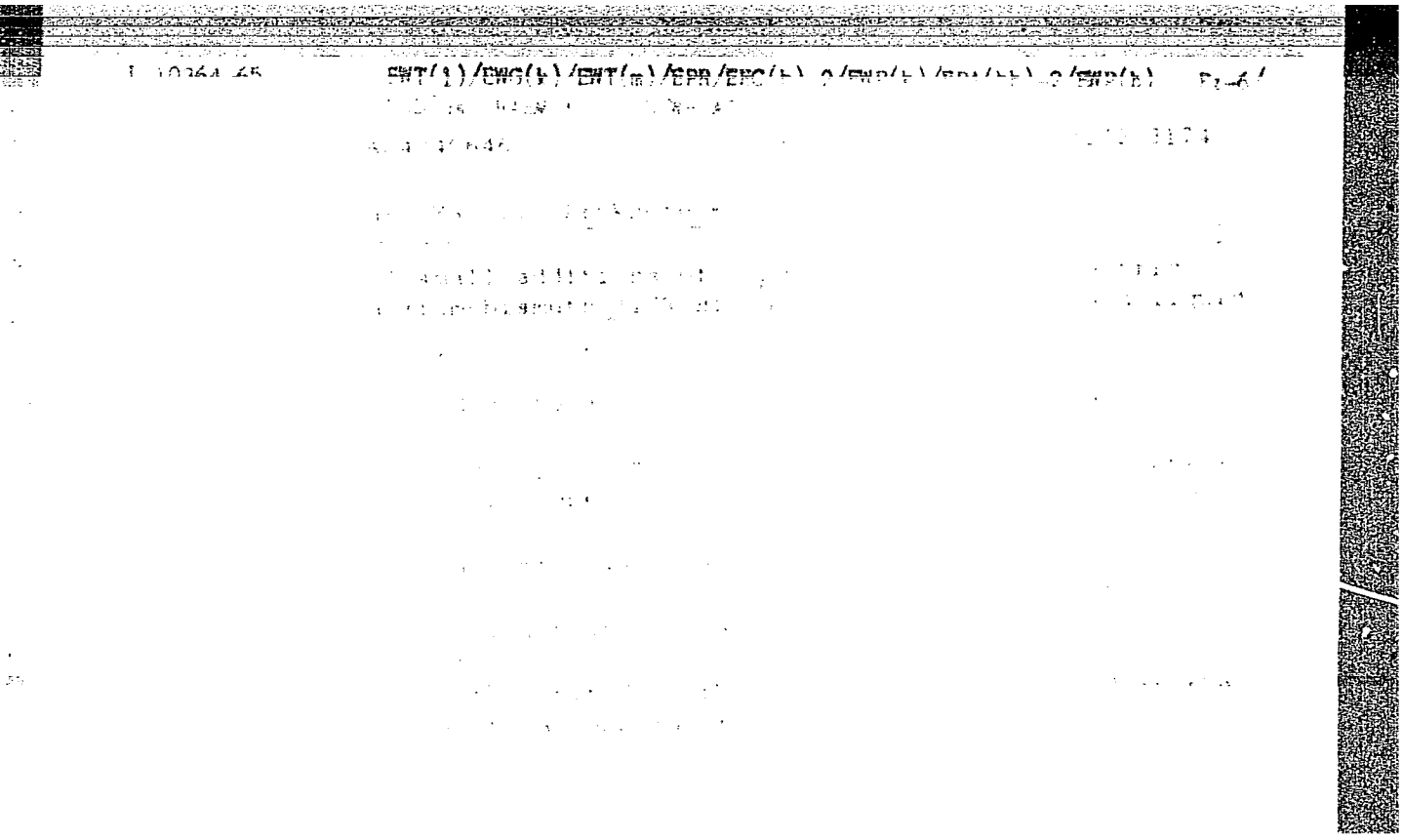

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-he solid and liquid states as a function of temperature and impuri-

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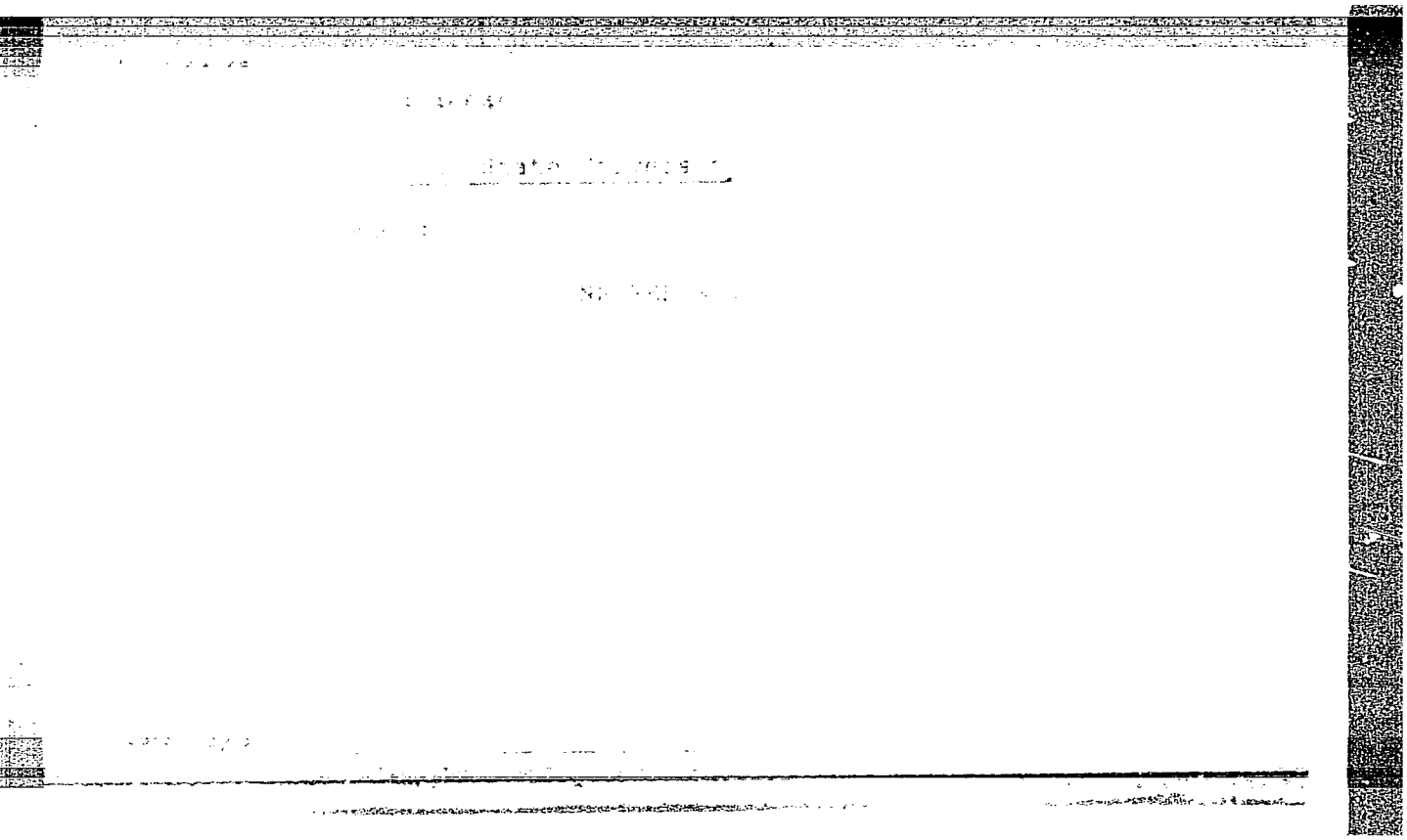

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ACCESSION NR: AP4012282 S/0070/64/009/001/0106/0108

AUTHORS: Mikolaychuk, A. G.; Dutchak, Ya. I.

TITLE: Structure of thin films of GaSb in the amorphous state

SOURCE: Kristallografiya, v. 9, no. 1, 1964, 106-108

TOPIC TAGS: GaSb, structure, thin film, amorphous state, electron diffraction, line intensity, radial distribution, heat treatment

ABSTRACT: The authors have investigated the structure of thin amorphous GaSb films by means of electron-diffraction studies. The films, 300-700 Å thick, were obtained by sputtering in a vacuum (10^{-4} - $5 \cdot 10^{-5}$ mm Hg) on a Zapon base. The temperature of the vapor at sputtering was 450-500C, of the base 20C, and the interval of sputtering ranged from a few seconds to several minutes. Curves for intensity and radial distribution were plotted. Very little difference was observed for untreated and heat-treated samples. On the radial-distribution curve a peak appeared at 2.65 Å for both kinds of samples, but the area under the peak for untreated samples was 11.3 as against 11.6 for the treated samples. A second peak appeared at 4.30 Å for the untreated sample, at 4.35 Å for the treated sample, with

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ACCESSION NR: AP4012282

the areas under the peaks being 56.1 and 61.5 respectively. The authors conclude that the thin amorphous films of GaSb have a structure similar to the structure of crystalline GaSb, and this structure is preserved down to the temperature of crystallization. "In conclusion, we consider it our pleasant duty to express our thanks to L. I. Tatarinova for her interest in the work and for valuable advice." Orig. art. has: 3 figures.

ASSOCIATION: L'vovskiy gosudarstvenny*y universitet im. Iv. Franko (Lvov State University)

SUBMITTED: 11Apr63 DATE ACQ: 19Feb64 ENCL: 00

SUB CODE: PH NO REF SOV: 009 OTHER: 002

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APPROVED FOR RELEASE: 08/25/2000 CIA-RDP86-00513R000411620006-1"

"APPROVED FOR RELEASE: 08/25/2000 CIA-RDP86-00513R000411620006-1

DUTCHAK, Ya.I.; STETS'KIV, O.P.; PANASYUK, P.V.

Thermo-e.m.f. in liquid alloys of the system lead - tin.
Fiz. met. i metalloved. 17 no.4:609-612 Ap '64.
(MIRA 17:8)

1. L'vovskiy gosudarstvennyy universitet imeni Franko.

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"APPROVED FOR RELEASE: 08/25/2000 CIA-RDP86-00513R000411620006-1

DUTCHAK, Ya.I.; STETS'KIV, O.P.; LYSYY, S.I.

Thermoelectromotive force in liquid alloys of the system antimony - bismuth. Fiz. met. i metalloved. 17 no.6:940-941 Je '64. (MIRA 17:8)

1. L'vovskiy gosudarstvennyy universitet imeni Ivana Franko.

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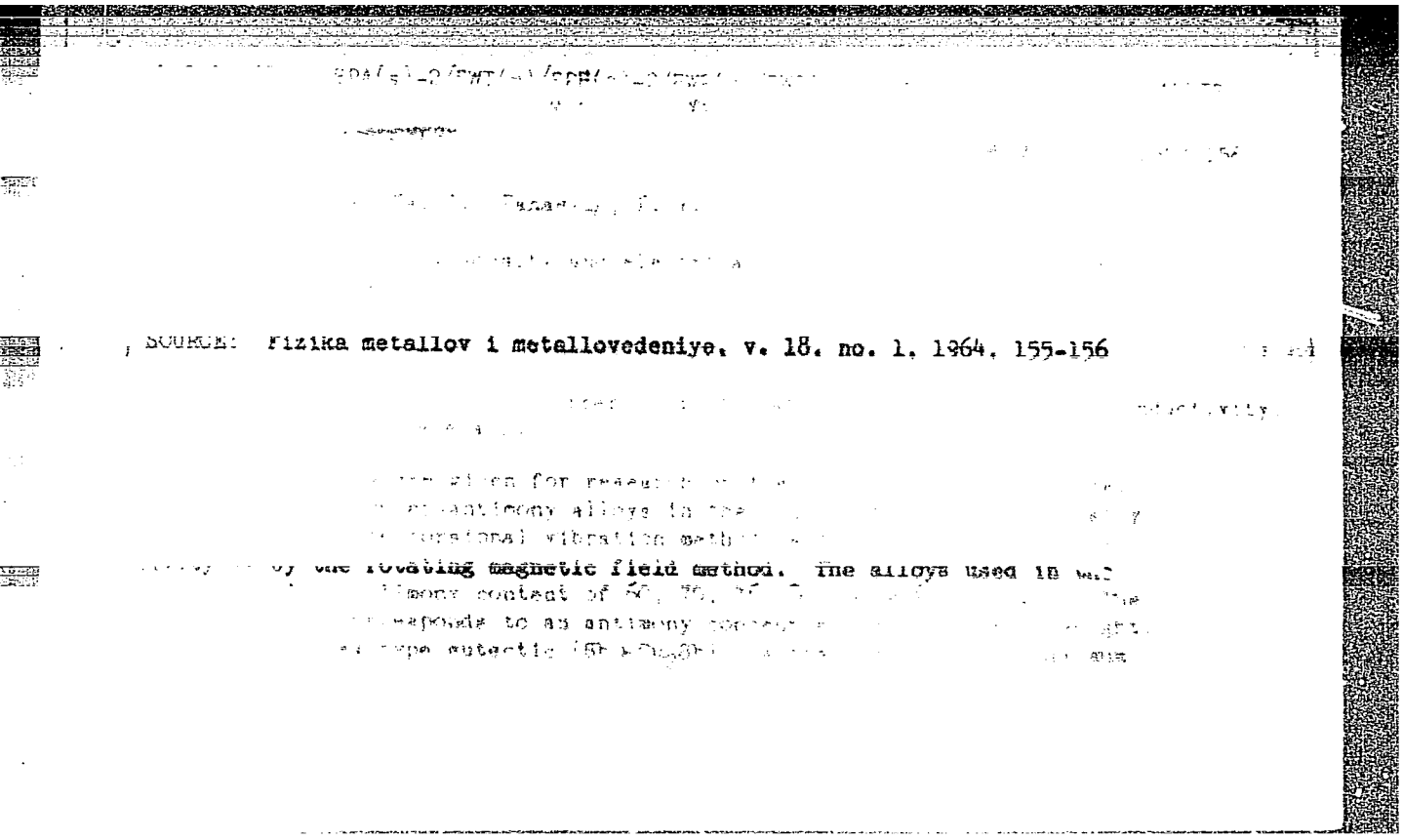

SOURCE: Fizika metallov i metallovedeniye, v. 18, no. 1, 1964, 155-156

by the rotating magnetic field method. The alloys used in

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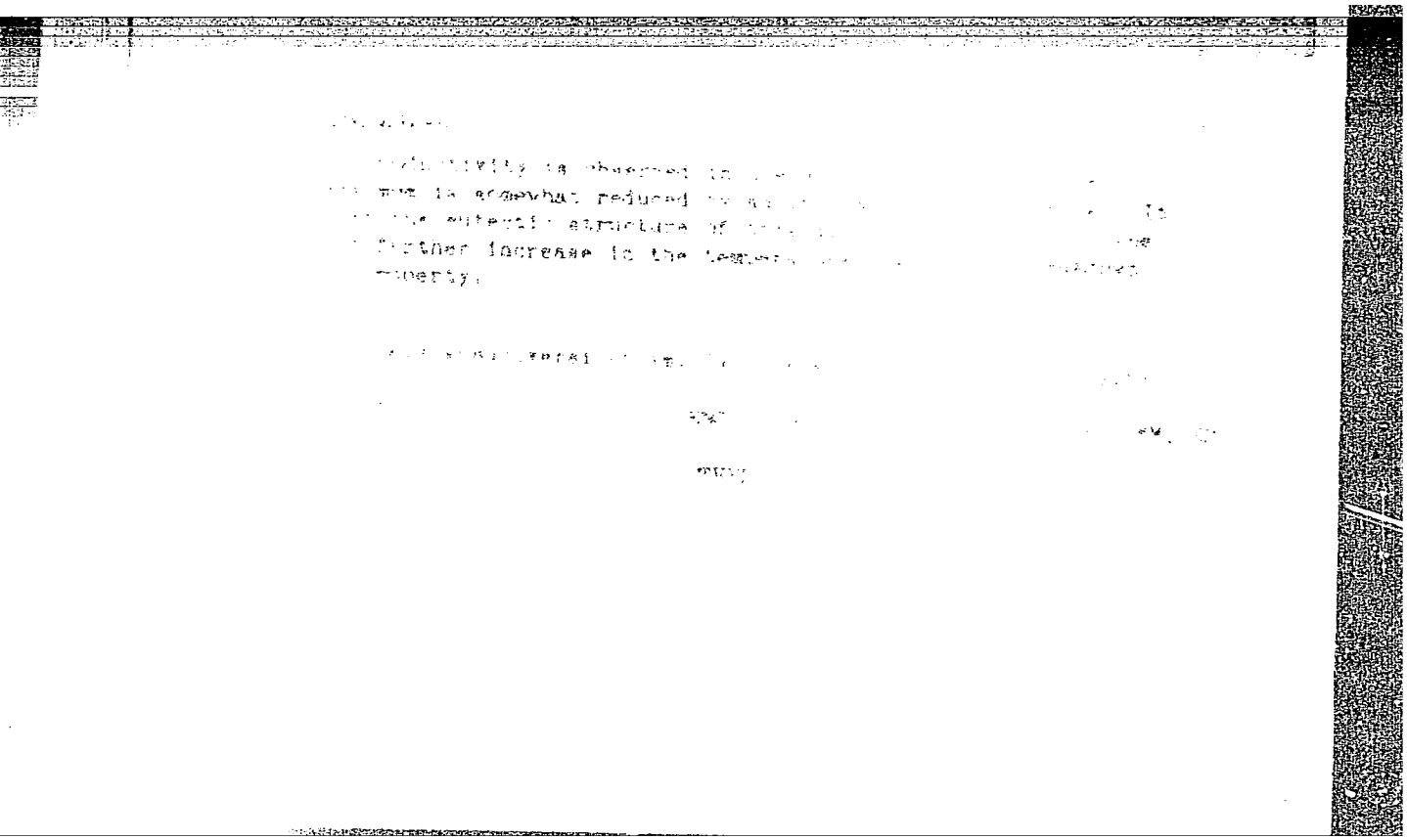

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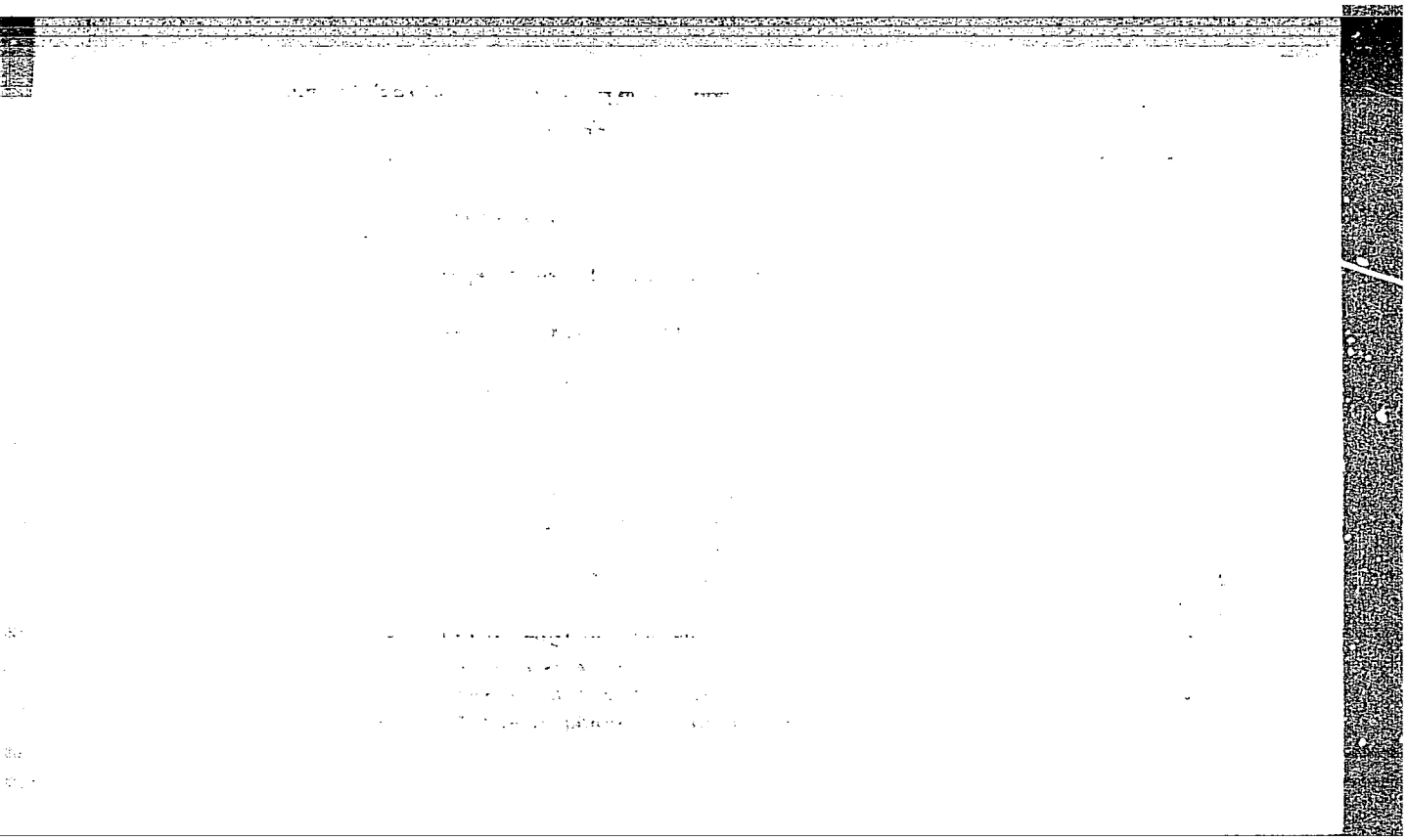

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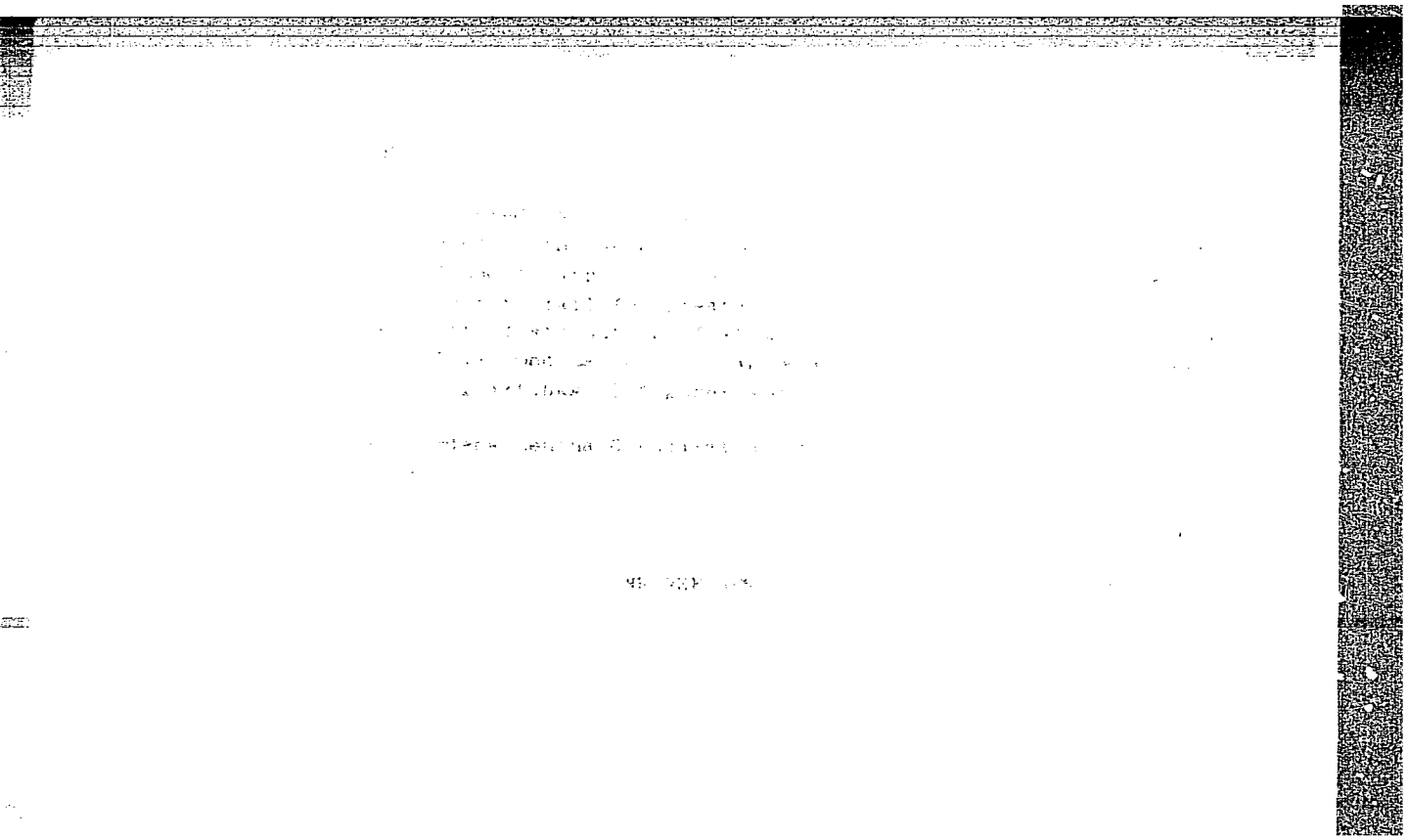

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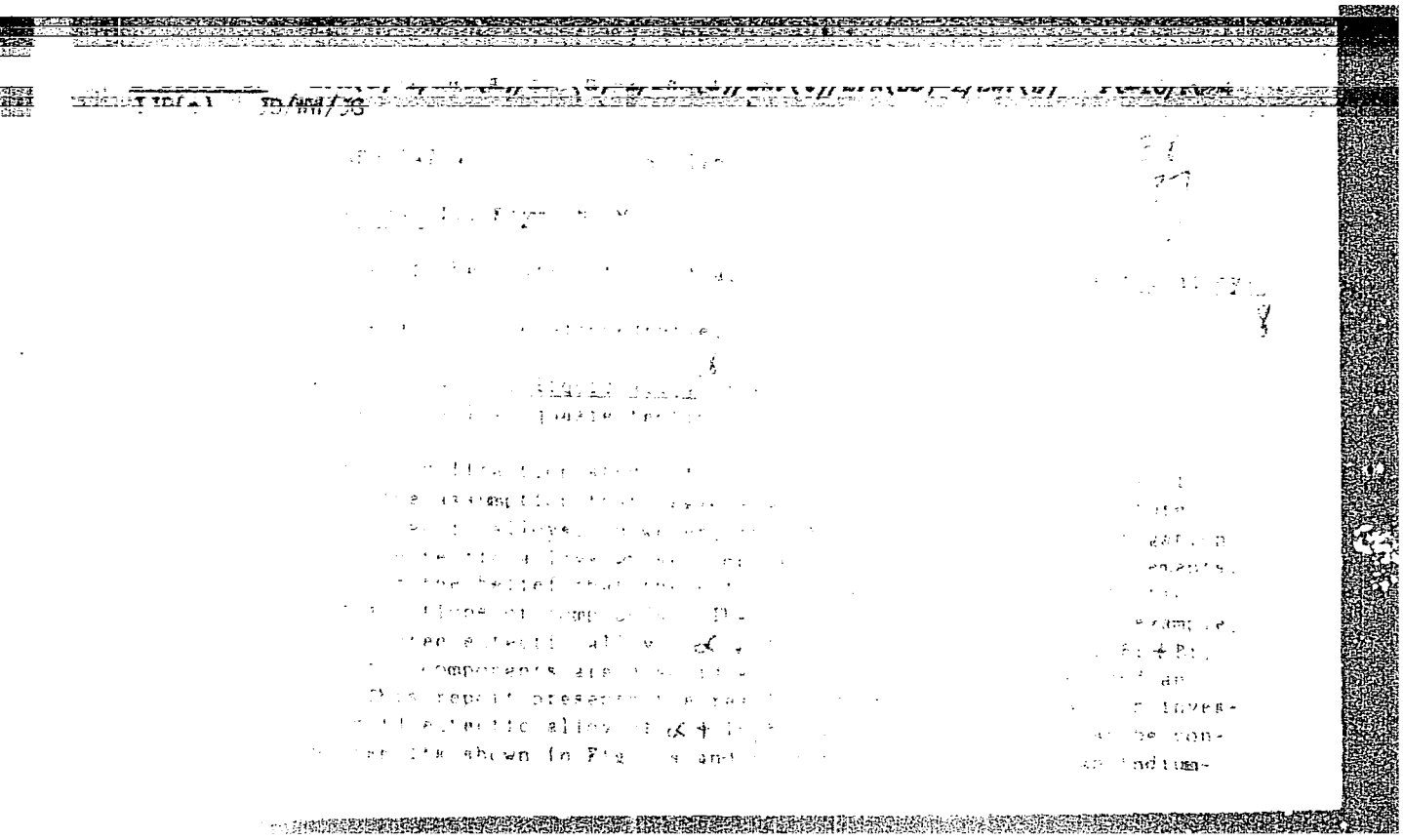

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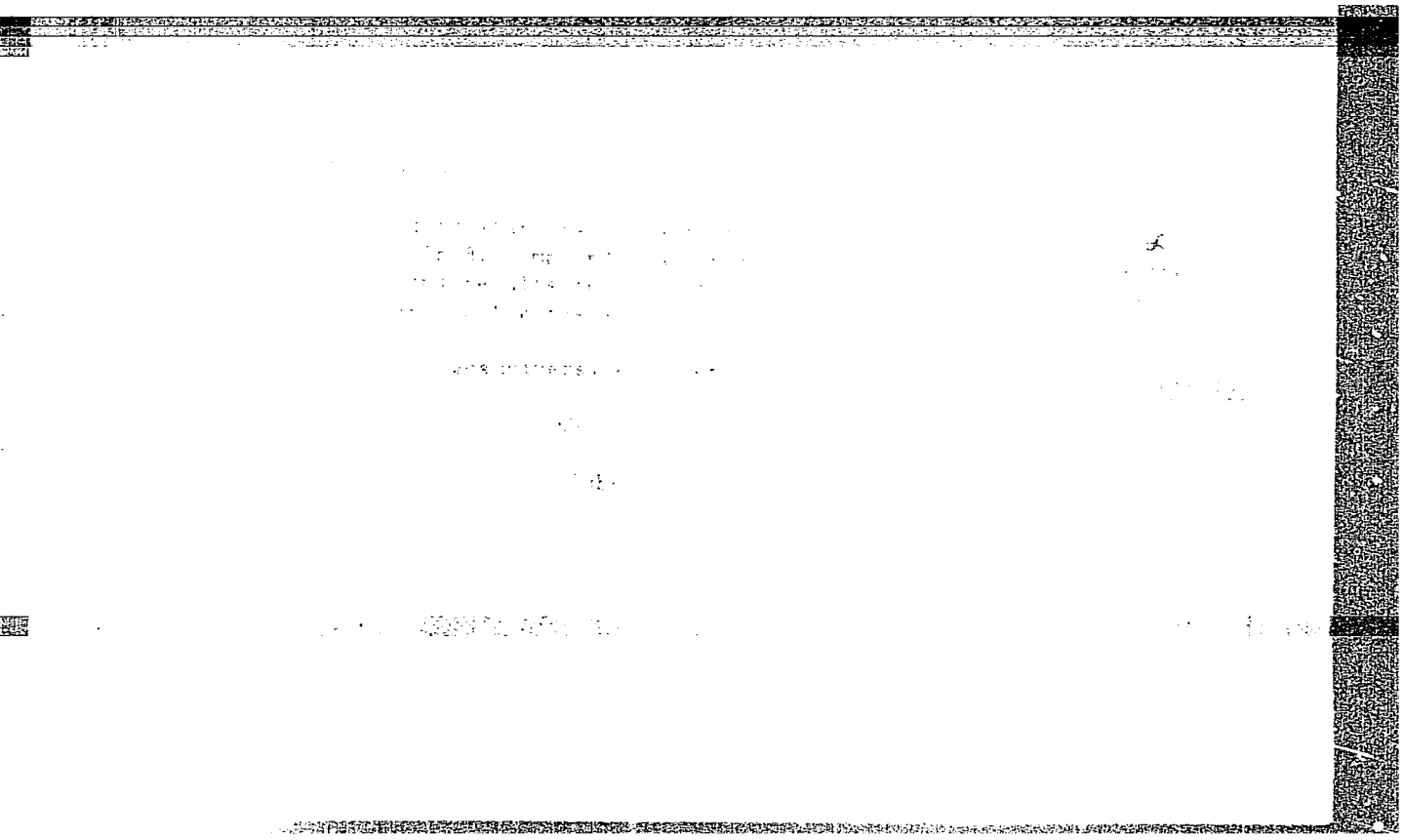

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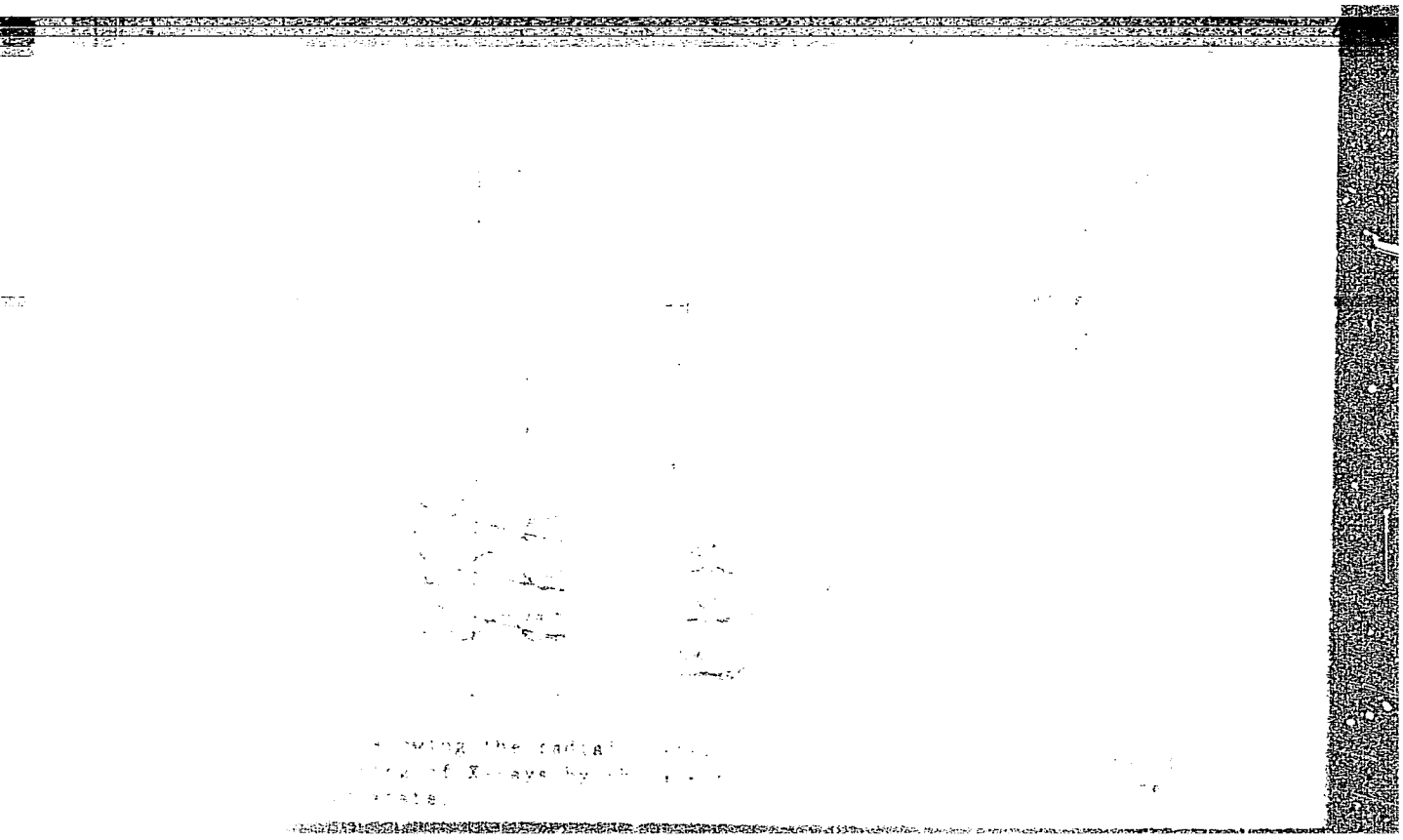

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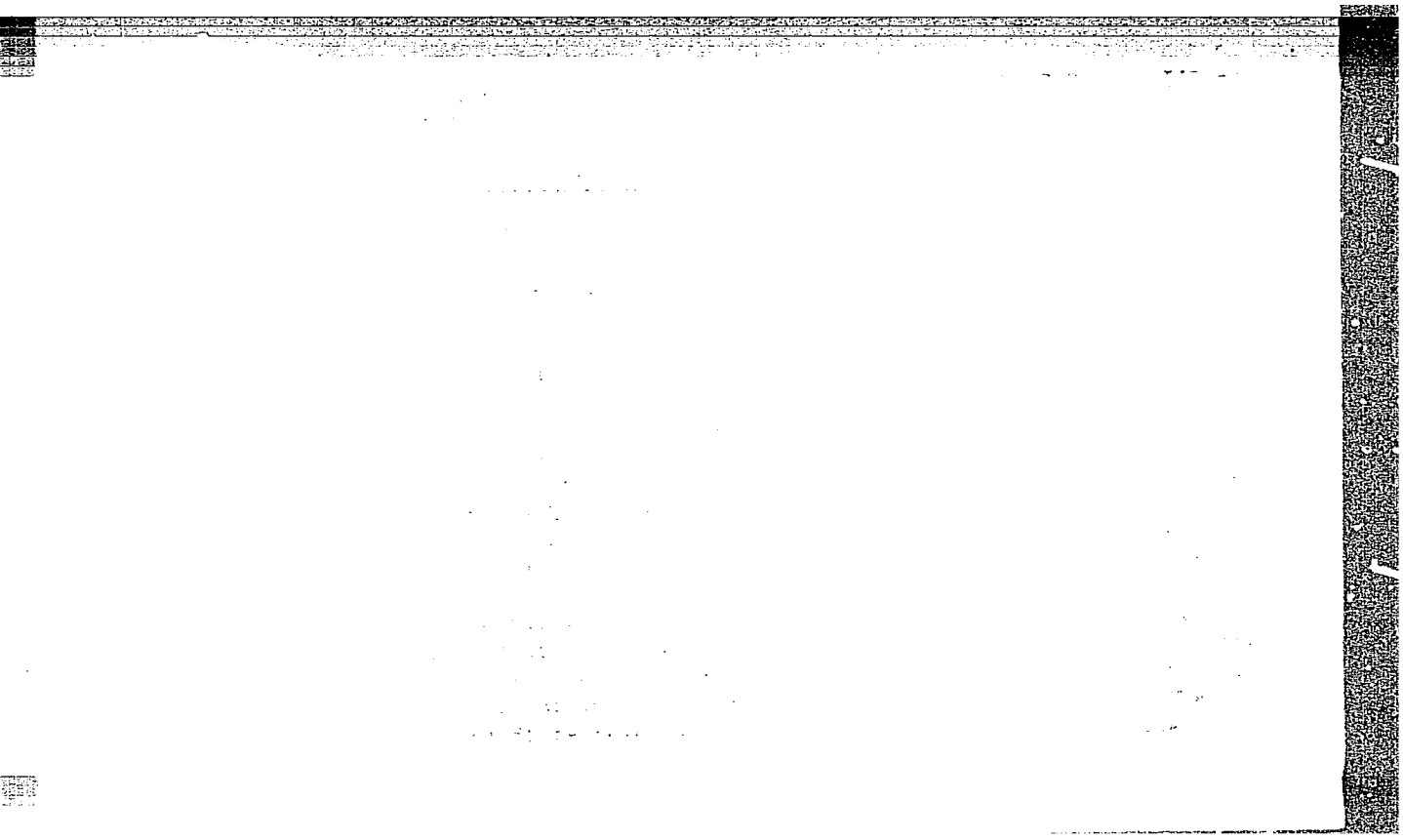

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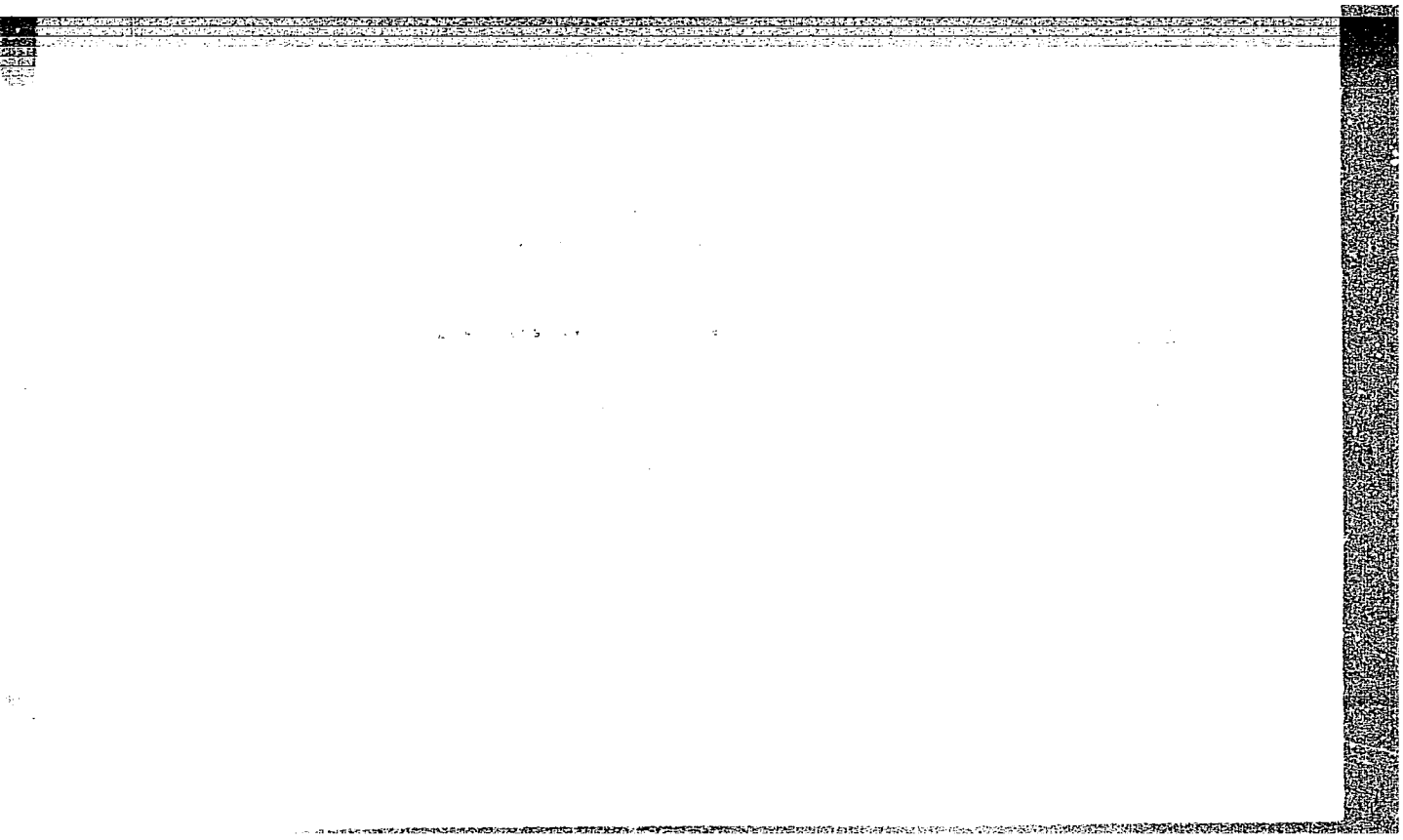

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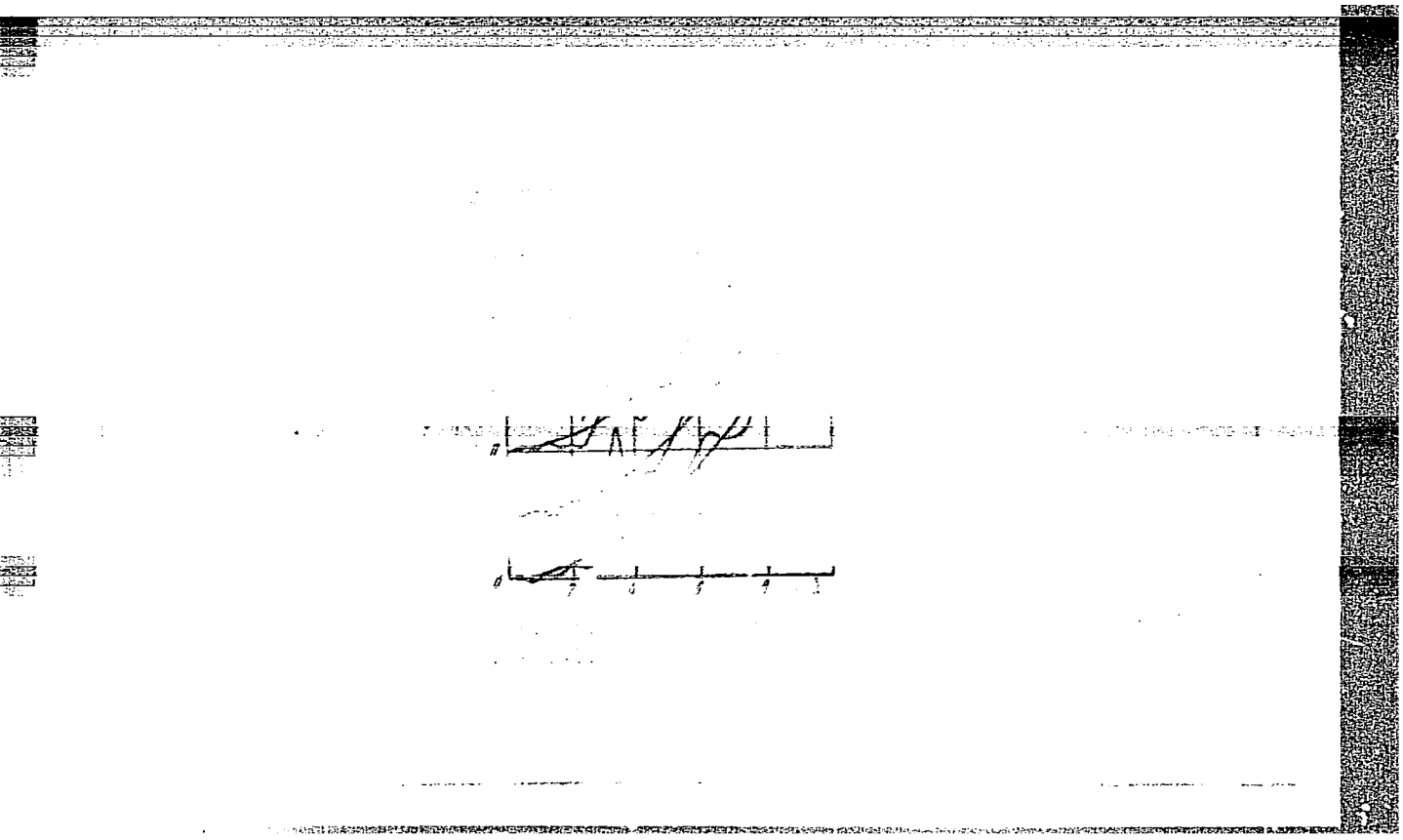

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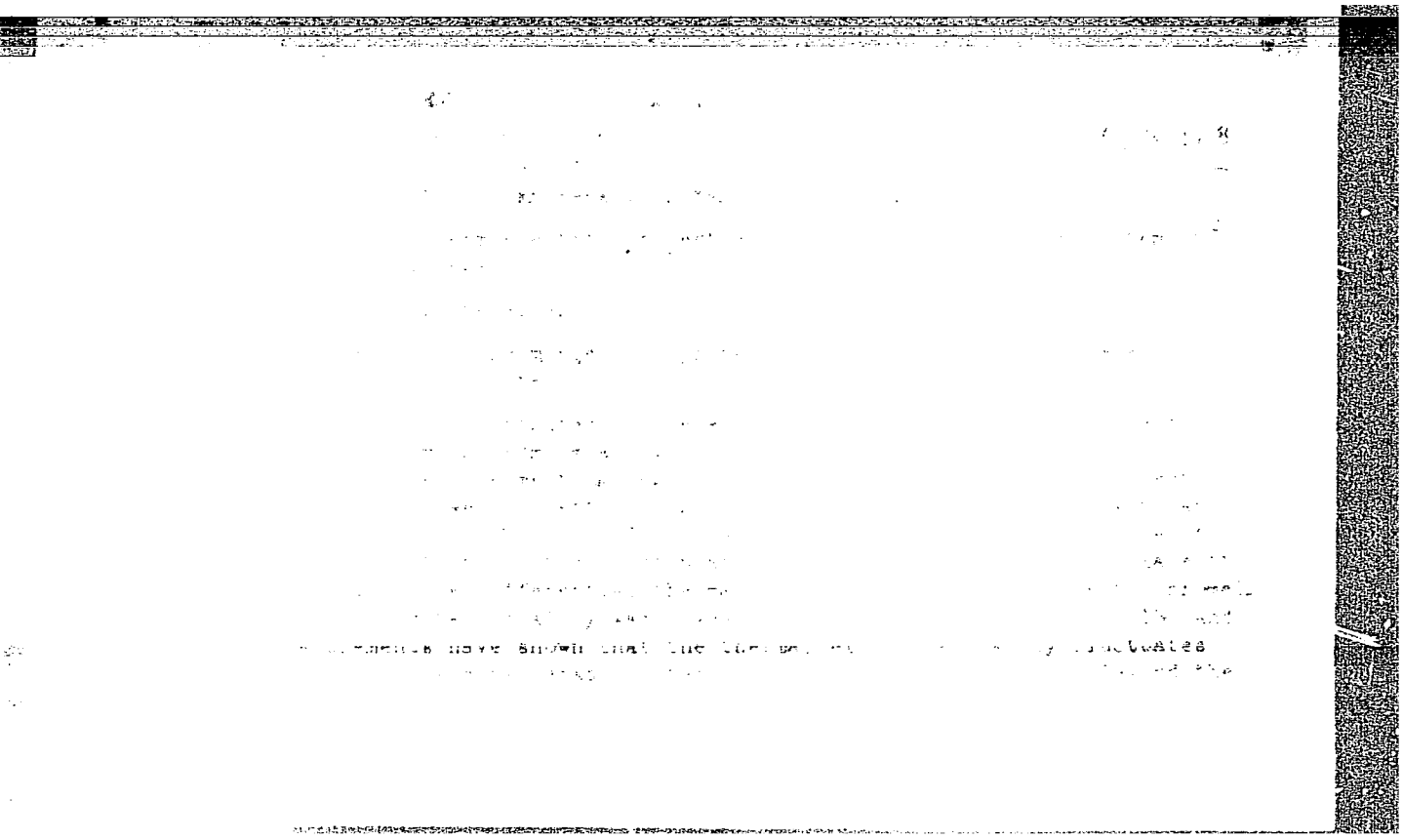

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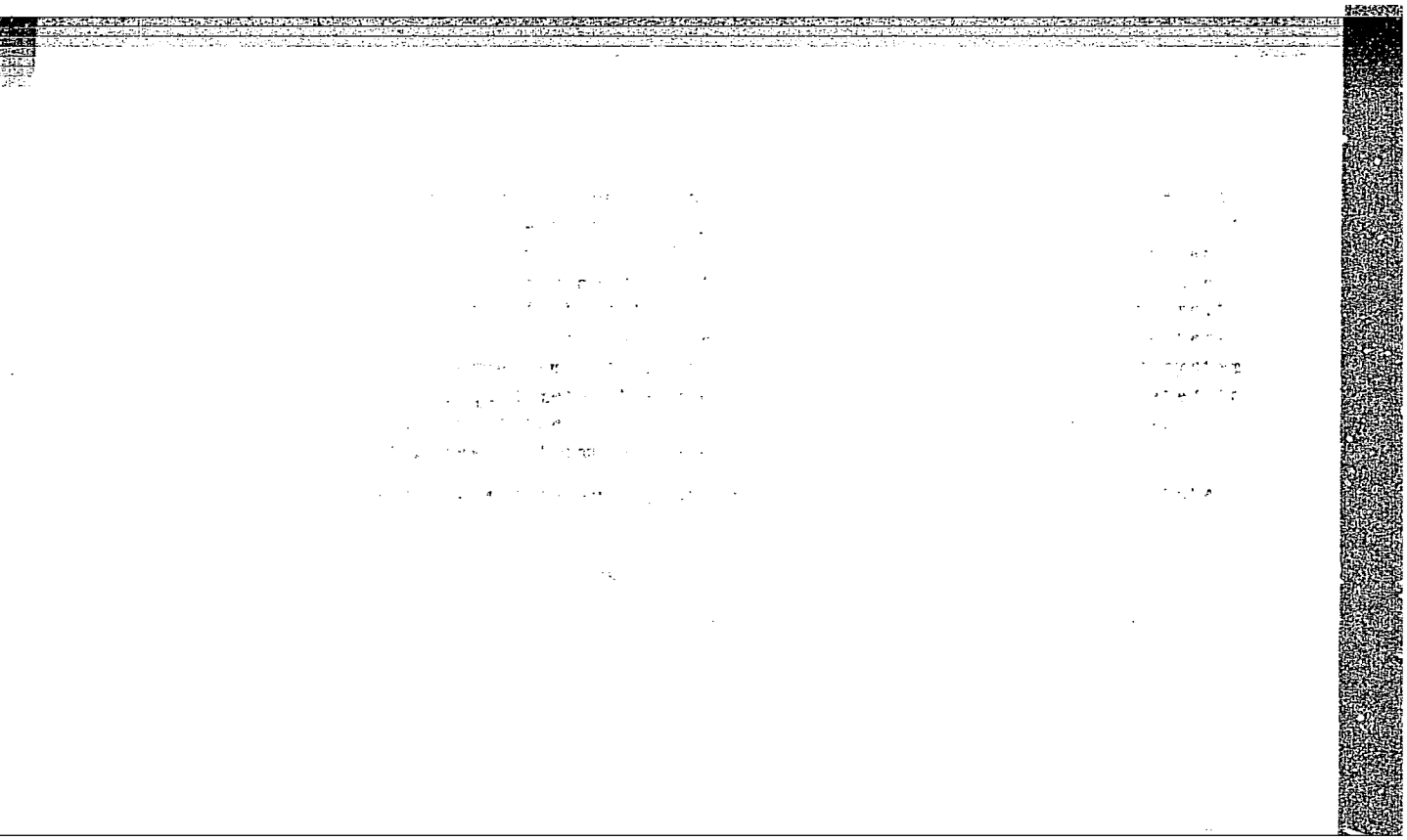

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L 2201-66 EWT(1)/EWT(m)/T/EWP(t)/EWP(b) IJP(c) JD/GG

ACCESSION NR: AP5017323 UR/0181/65/007/007/2213/2214

AUTHOR: Dutchak, Ya. I.; Mikolaychuk, A. G.

TITLE: Concerning the structure of In_2Bi in the amorphous state

SOURCE: Fizika tverdogo tela, v. 7, no. 7, 1965, 2213-2214

TOPIC TAGS: indium alloy, bismuth alloy, crystal lattice structure

ABSTRACT: The authors have shown earlier (FMM v. 14, 787, 1962) that the atoms of the indium and of the bismuth are located at the same positions in liquid In_2Bi at the melting temperature as in the solid state. To determine the influence of the aggregate state of the matter on the coordination numbers and the interatomic distances, the authors investigated the distribution of the atoms in amorphous In_2Bi by an electron-diffraction method. The samples were prepared by evaporating In_2Bi in vacuum, and the maximum thickness at which the condensate was amorphous was 300 Å. The electron-diffraction patterns were obtained by the method of multiple exposures, described by L. I. Tatarinova (Tr. Inst. Kristallogr. v. 11, 104, 1955). The values of the coordination numbers for the first coordination sphere are $n_{Bi, In} = 11.5$ and $n_{In, Bi} = 5.8$, and are close to those obtained for crystalline and molten In_2Bi. It is thus concluded that In_2Bi has the same short-range order structure in all modifications. Orig. art. has: 2 figures and 1 formula.

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"APPROVED FOR RELEASE: 08/25/2000 CIA-RDP86-00513R000411620006-1

L 2201-66

ACCESSION NR: AP5017323

ASSOCIATION: L'vovskiy gosudarstvennyy universitet im. I. Franko (L'vov State University) 44,55

SUBMITTED: 28Dec64 ENCL: 00 SUB CODE: SS

NR REF SOV: 005 OTHER: 000

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APPROVED FOR RELEASE: 08/25/2000 CIA-RDP86-00513R000411620006-1"

"APPROVED FOR RELEASE: 08/25/2000 CIA-RDP86-00513R000411620006-1

DUTCHAK, Ya.I.; KLYM, N.M.

X-ray study of In-Bi alloys in the liquid state. Zhur. fiz. khim. 39 no.3:766-768 Mr '65. (MIRA 18:7)

1. L'vovskiy gosudarstvennyy universitet imeni Ivana Franko.

APPROVED FOR RELEASE: 08/25/2000 CIA-RDP86-00513R000411620006-1"

"APPROVED FOR RELEASE: 08/25/2000 CIA-RDP86-00513R000411620006-1

L 12167-66 EWT(m)/EWP(t)/EWP(b) IJP(c) JD/JG
ACC NR: AP5028379 SOURCE CODE: UR/0369/65/001/005/0612/0613

AUTHOR: Dutchak, Ya. I.; Dorofeyeva, A. K.; Mikolaychuk, A. G.

ORG: L'vov State University im. Iv. Franko (L'vovskiy gosudarstvennyy universitet)

TITLE: The effect of small deformations on the static atomic displacement in copper and molybdenum

SOURCE: Fiziko-khimicheskaya mekhanika materialov, v. 1, no. 5, 1965, 612-613

TOPIC TAGS: x ray analysis, deformation, copper, molybdenum, crystal lattice deformation, material deformation, crystal lattice structure

ABSTRACT: This article presents the results of x-ray determination of the magnitude of static atomic displacement in electrolytic copper and technically pure molybdenum. Deformation was achieved by rolling thin wire between two polished steel plates. Results show that an increase in the degree of deformation increases the mean square deviation of the atoms from an equilibrium position in the crystal lattices of copper and molybdenum. It is noted in conclusion that there are no sufficient data at present which contributes to the determination of the effect of deformation of specimens in various aggressive media on the dis-

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L 12167-66
ACC NR: AP5028379

tortion of the crystal lattice. These questions, however, are urgent because many metal parts and devices operate in such media. Orig. art. has: 1 figure and 1 table.

SUB CODE: 11, 20 / SUBM DATE: 12Feb65

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"APPROVED FOR RELEASE: 08/25/2000 CIA-RDP86-00513R000411620006-1

L 21849-66 EPF(n)-2/EWT(1)/EWT(m)/ETC(f)/EWG(m)/T/EWP(t) IJP(c) AT/WW/JD/JG

ACC NR: AP6010751 SOURCE CODE: UR/0076/66/040/003/0718/0719

AUTHOR: Dutchak, Ya. I.; Stets'kiv, O. P. 28 B

ORG: L'vov State University im. Ivan Franko (L'vovskiy gosudarstvennyy universitet)

TITLE: Thermoelectric power of liquid alloys of the indium-bismuth system

SOURCE: Zhurnal fizicheskoy khimii, v. 40, no. 3, 1966, 718-719

TOPIC TAGS: indium bismuth system, indium alloy, bismuth containing alloy, alloy thermoelectric power

ABSTRACT: The thermoelectric properties of liquid indium-bismuth alloys has been investigated at 240, 300, and 400 C. Alloy specimens were obtained from 000-grade indium and 99.99%-pure bismuth. The thermoelectric power was determined in argon atmosphere in relation to an alumel electrode with a temperature gradient of about 50C. On the basis of the obtained data the curves of composition dependence of the differential thermoelectric power for indium-bismuth alloys were plotted (see Fig. 1). The maxima

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L 21849-66

ACC NR: AP6010751

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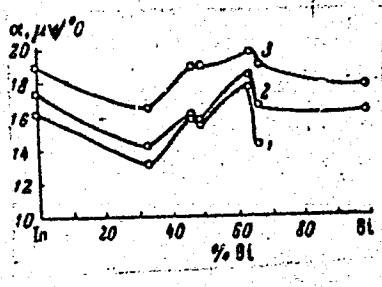

Fig. 1. Composition dependence of the differential thermal emf of In-Bi alloys

of the curves correspond to In_2Bi and InBi compounds and the minima, to eutectic composition. All investigated alloys have a negative thermoelectric power whose absolute magnitude does not exceed -4.5 μv/C. Investigations of the conductivity mechanism indicated that indium-bismuth alloys in either the solid or liquid state have metallic-type conductivity. Orig. art. has: 1 figure and 1 table. [AZ]

SUB CODE: 11 SUBM DATE: 10May65/ ORIG REF: 009/ OTH REF: 002/ ATD PRESS: 4227

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"APPROVED FOR RELEASE: 08/25/2000 CIA-RDP86-00513R000411620006-1

L 23115-66 EWT(m)/EWP(w)/EPF(n)-2/T/EWP(t) IJP(c) JD/WW/JG
ACC NR: AP6006863 SOURCE CODE: UR/0181/66/008/002/0598/0599

AUTHOR: Dutchak, Ya. I.; Prokhorenko, V. Ya.; Klym, N. M.; Gadzevich, K. Ye.

ORG: L'vov State University im. Iv. Franko (L'vovskiy gosudarstvennyy universitet)

TITLE: Structure and electric properties of alloys of the systems indium-gallium and gallium-tin in the regions of melting and the liquid state

SOURCE: Fizika tverdogo tela, v. 8, no. 2, 1966, 598-599

TOPIC TAGS: indium alloy, gallium alloy, tin alloy, alloy phase diagram, alloy system, thermoelectric power, electric resistance, x ray diffraction analysis

ABSTRACT: To obtain quantitative data on the structure of the liquid alloys the authors have measured the concentration dependence of the absolute thermoelectric power and of the electric resistivity of 15 alloys of different compositions for each system. From an analysis of the plotted results, in conjunction with the plots of the state diagrams, it is concluded that in the case of the gallium-tin system the eutectic composition is transformed into a physical solution with statistical distribution of atoms of different sorts at temperatures below 50C. For the indium-gallium system, the statistical distribution of the atoms is characterized at temperatures on the order of 80C. These conclusions are in full agreement

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ACC NR: AP6006863

with results of x-ray diffraction analysis. Orig. art. has: 2 figures.

SUB CODE: 20/ SUBM DATE: 08Jul65/ ORIG REF: 007

Card 2/2 B.C

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"APPROVED FOR RELEASE: 08/25/2000 CIA-RDP86-00513R000411620006-1

L 02518-67 EWT(d)/EWT(l)/EWT(m)/EWP(w)/EWP(v)/T/EWP(t)/ETI/EWP(k)/EWP(h)/EWP(l)
ACC NR: AP6023005 SOURCE CODE: UR/0185/66/011/004/0455/0457
IJP(c) JD/WW/JG/AT/JH
AUTHOR: Dutchak, Ya. Y.; Panasyuk, P. V.; Stets'kiv, O. P.

78
76
B

ORG: Lvov State University im. I. Franko (L'vivs'kyy derzhuniversytet)

TITLE: Heat and thermoelectric properties of liquid alloys in the tin-lead system

SOURCE: Ukrayins'kyy fizichnyy zhurnal, v. 11, no. 4, 1966, 455-457

TOPIC TAGS: alloy system, heat conductivity, pyrometer, thermoelectromotive force, lead containing alloy, tin containing alloy

ABSTRACT: The authors study thermal and thermoelectric properties of alloys in the Pb-Sn system with the following concentrations of Sn (wt.%): 0, 5, 10, 20, 40, 61.9, 80, 96, 98 and 100. Heat conductivity measurements were taken by the heat wave method. The FPK-59 pyrometer was used and the specimens to be tested were placed in cylindrical thin-walled crucibles made from stainless steel. Each crucible was placed in a furnace with two heating units surrounding the specimen coaxially. The chromel-alumel thermocouples were fastened to the interior of the specimen, one at the center, and the other at a given distance from the center. Periodic disconnection of the innermost heating element produced radial heat waves. Fluctuation amplitude did not exceed 1°C. Expressions are given for calculating the heat conductivity coefficients. The results show that these coefficients decrease as temperature is increased. The thermoelectric

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properties of the alloys studied were measured by a method described in the literature. The integral thermoelectromotive force was measured with respect to alumel by the R-306 pyrometer. X-ray diffraction analysis of the eutectic alloy shows regions which contain distributions typical of the interface between pure components where additional mixing energy indicates a strong interaction between like atoms. A study of thermal conductivity and the temperature dependence of thermal conductivity as functions of concentration at 400°C shows a deviation from linearity with a maximum at the eutectic point. A graph is given showing the integral thermoelectromotive force as a function of alloy composition at temperature differences of 100, 200, 300 and 400°C between thermocouple junctions. "Cold" soldering of the specimen holds to 50°C above the melting point. Convex thermoelectromotive curves describe regions with concentrations which conform to the phase diagram for α- and β-solid solutions. The eutectic composition is fixed by the point on the curves corresponding to the maximum thermoelectromotive force. It may be assumed that microregions with a pure component structure reduce thermal conductivity and increase the thermoelectromotive force with respect to those quantities which are determined by the laws governing additives. Orig. art. has: 2 figures.

SUB CODE: 11/ SUBM DATE: 29Nov65/ ORIG REF: 005/ OTH REF: 001

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"APPROVED FOR RELEASE: 08/25/2000 CIA-RDP86-00513R000411620006-1

L 01818-67 EWT(1)/T IJP(c) GG

ACC NR: AP6030803 SOURCE CODE: UR/0185/66/011/009/0978/0981 52 B

AUTHOR: Dutchak, Ya. Y.--Dutchak, Ya. I.; Mykolaychuk, O. H.-- Mikolaychuk, A. G.; Kogut, O. M.--Kogut, A. M.

ORG: Lvov State University im. I. Frank (L'vivs'kyy derzhuniversytet)

TITLE: Effect of x rays on the conductivity of thin HgS films 21

SOURCE: Ukrayins'kyy fizychnyy zhurnal, v. 11, no. 9, 1966, 978-981

TOPIC TAGS: radiation, photoconductivity, mercury sulfide, radiation dosimeter

ABSTRACT: A method is described for obtaining films of a trigonal modification of mercury sulfide by evaporation in vacuo of artificial α-HgS samples. The effect of x-rays on the conductivity of thin films was investigated. The radiation sources were tubes with anticathodes of Cr, Fe, Co, Cu, and Mo. The x-rays dose falling on the sample, was determined with a PM-1-M dosimeter. It was shown that the photocurrent value depends on the dose and wavelength of the characteristic radiation and increases with increasing wavelength. The continuous radiation of a short-wave spectrum does not substantially affect the photocurrent value. These data indicate that with a thin film, the photoconductivity of the sample is deter-

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"APPROVED FOR RELEASE: 08/25/2000 CIA-RDP86-00513R000411620006-1

L 01818-67

ACC NR: AP6030803

mined, first of all, by the linear absorption coefficient, and not by the quantum yield or the life of the current carrier. Orig. art. has: 3 figures. [Based on authors' abstract] [NT]

SUB CODE: 20/ SUBM DATE: 16Dec65/ ORIG REF: 005/. OTH REF: 002/

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"APPROVED FOR RELEASE: 08/25/2000 CIA-RDP86-00513R000411620006-1

L 09017-67 EWT(m)/EWP(w)/EWP(t)/ETI IJP(c) JD/WW/JG

ACC NR: AP6027796 SOURCE CODE: UR/0126/66/022/001/0123/0124

AUTHOR: Dutchak, Ya. I.; Stets'kiv, O. P. 58

ORG: L'vov State University im. Iv. Franko (L'vovskiy gosuniversitet)

TITLE: Thermoelectric properties of certain metals and alloys in molten state

SOURCE: Fizika metallov i metallovedeniye, v. 22, no. 1, 1966, 123-124

TOPIC TAGS: potentiometer, thermoelectric property, molten metal, thermoelectromotive force / R-306 potentiometer

ABSTRACT: This work is a continuation of previous investigations (Dutchak, Ya. I., et al. FMM, 1962, 14, 789; FMM, 1964, 17, 940; ZhTF, 1964, 34, 1901), with the difference that it deals with the dependence of thermo-e.m.f. on composition for alloys of the Ga-Pb and Pb-Bi systems as well as for the metals Pb, Sn, Zn, Cd, Bi, Sb, Ga, on using an alumel wire as the reference electrode. The thermo-e.m.f. was recorded with the aid of a R-306 potentiometer. For the pure metals absolute thermo-e.m.f. was determined from the formula $\alpha_m = \alpha_{m-al} + \alpha_{al}$ where α_{m-al} is the differential thermo-em.f. of the molten metal--alumel couple and α_{al} is the absolute thermo-e.m.f. of alumel. Findings: for the Pb-Bi

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system the curves of integral thermo-e.m.f. display a minimum corresponding to an alloy with eutectic concentration, i.e. the eutectic point is fixed. This finding is in agreement with the findings of x-ray analysis (Sharrach, P. S., et al. J. Chem. Phys., 32, 241, 1960) which show that regions with pure-component structure exist in the molten eutectic Pb-Bi alloy. It is established that for most of these metals absolute thermo-e.m.f. is independent of temperature (in the 200-800°C range). These findings were used to construct the thermoelectric series of the molten metals at the temperature $T_{m.p.}$ + 100°C: Sb, Zn, Cd, Sn, Ga, Bi, Pb, with the corresponding series for these metals in solid state being: Sb, Cd, Zn, Pb, Sn, Bi. It is worth noting that the difference in the variation in thermo-e.m.f. between the extreme members of the series for the solid metals is ~120 μv/deg whereas for the molten metals it is ~10 μv/deg. This fact appears to indicate that, when in molten state, the metals differ from each other much less than when in solid state. Orig. art. has:

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ACC NR: AP7005823 SOURCE CODE: UR/0181/66/008/012/3463/3466

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TITLE: Singularities in the structure of alloys of the tin-antimony system in the liquid state

SOURCE: Fizika tverdogo tela, v. 8, no. 12, 1966, 3463-3466

TOPIC TAGS: antimony ~~containing~~ alloy, tin base alloy, liquid state, thermoelectric power, matter structure, carrier density

ABSTRACT: In view of the little attention paid in the past to the liquid state of the Sn-Sb system, the authors investigated by x-ray diffraction analysis the structure of a liquid alloy containing 8.8 at.% Sb, using as the structure-sensitive property the absolute thermoelectric power, which was investigated in a wide range of temperatures using 12 liquid alloys of the system. In addition, the structure of the 8.8% alloy was investigated at 255 and 415C with the aid of x-ray diffraction. The radial distribution of the atoms in the liquid alloys was determined by the Fourier method from the scattering intensity curves. At low antimony concentrations, the obtained isotherms were smooth curves, in agreement with the x-ray structure analysis, indicating that the atoms are statistically distributed. At 65 at.% Sb, corresponding to the high-temperature limit of the intermetallic β phase, a maximum appears on the isotherm curve. This maximum is attributed to partial retention of directional

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bonds. This assumption is confirmed by the large sensitivity of the thermoelectric power to the carrier density. It was also noted that the thermoelectric power of molten alloys with high antimony concentrations decreases with temperature. This result is connected with the highly developed covalent bonding of the antimony in the solid state and the sharp increase in the free-electron density upon melting. Orig. art. has: 3 figures, 1 formula, and 1 table.

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